

MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY



I.—‘ABSOLUTE’ AND ‘RELATIVE’ TRUTH.

BY HAROLD H. JOACHIM.

§ 1. THE view, which I wish to attack, may be put roughly as follows: Every judgment is either true or false, and what is true is true always and absolutely and completely. What is true is *eo ipso* “absolutely” true. “Relative truth” is a contradiction in terms, and “absolute” is an otiose addition to “truth”. There may be truth about the Relative—all truth, indeed, is about Relations—but the truth about the Relative is itself absolute, *i.e.* true neither more nor less. A “partial truth” is a judgment which contains complete and absolute truth, but which, as compared with another judgment, covers with its truth part only of the subject-matter of the latter. The same “partial truth,” looked at from the point of view of the larger judgment and wrongly taken as equivalent to it, is an “error”. Hence a “partial truth” is the same thing as a true, but indeterminate, judgment. The determinate judgment is the whole truth about a matter where the indeterminate judgment affirms only part of the truth. But the part affirmed is true absolutely and completely, and remains true to all eternity: it is the whole truth about part of the matter. It is added to, increased, supplemented by the determination: but in the supplementation it is not annulled, nor even altered. Its truth remains, and remains *quâ* truth precisely what it was.

Three types of judgment may be taken in illustration. (1) “The interior angles of a triangle are equal to two right angles,” “ $2 + 2 = 4$ ”. Such judgments remain true, and

true without alteration of their truth, however much may be added to them by the development of geometrical and arithmetical knowledge. (2) "This tree is green," "the roof of my house is wet". Such judgments are true under the relations and at the time involved in their affirmation. And their truth remains unalterable, provided you are careful to remember what is affirmed in them: *i.e.* what "their truth" is. No doubt the content of these judgments, as they are expressed, is indeterminate. Their content is fixed and defined by a complex of relations: but though the judgments thus imply this complex, they do not (perhaps could not) fully express it. The truth expressed in them is vague and slight and capable of infinite further determination. But any further determination—even *e.g.* that which Omniscience would give to them—would supplement, *but would not alter*, the truth which they contain for you and me when we make them. If we say, *e.g.*, "This tree is green," "*this*" for our knowledge (for discursive thinking) is indeterminable. But if Omniscience were to determine "*this*," what is true for us of "*this tree*" (as fixed for us now by perception) would remain true of "*this tree*" as fixed by the infinity of relations forming the content of that Omniscience: though no doubt *more* would be true for that Absolute Knowledge of "*this tree*" than merely what is now true for us. Again, "*this tree*" persists through a period of time and changes its properties. In the winter "*this tree*" is brown, in the night it is black, and always (while it exists) it is much besides "green". But still "This tree *is* green": and the fact that it is much more besides, and that its greenness changes and vanishes, does not annul nor alter the fact that it *is* green here and now, *viz.* under the conditions in which the judgment claims truth. Nor, lastly, is the truth of the judgment rendered "relative" by the fact that "green" is relative to the normal human vision. For that too is implied in the content of the judgment as affirmed and as claiming truth. We mean to predicate of "*this tree*" a quality, which to the present normal human vision appears as "green": and this fact—the fact affirmed in our judgment—will hold and hold unaltered, even though the appearance would be different to the colour-blind, or to the eye of a fly, or to the normal human vision as it may be two thousand years hence. (3) Lastly, certain negative judgments afford a good illustration of the view which we are to attack. For if it is true that "I did not play golf yesterday," can the truth of that judgment be altered or in any sense vanish even for infinite knowledge? And if it is true now that "the walls of this

room are not a mile apart," can that truth be said to have altered or vanished when further acquaintance with the room enables me to judge that "the walls of this room are twenty feet apart"?

§ 2. The above is the view, as nearly as I can state it, which I wish to attack. It appears to me to be itself an instance of a "relative" truth: *i.e.* though it is, in a sense and within limits, a true account of the nature of true judgment, it is not *the* truth of the matter. It is possible—as I hope to show—to formulate a view which, while doing justice to the truth contained in the view in question, will also reveal its deficiencies. The relatively completer view, which thus swallows and digests the first, will doubtless itself fall short of complete, final and unalterable truth. But if it can be shown to explain the shortcomings of the first view and to contain the truth of that view in a modified and supplemented form, at least it will be clear that the first view, so far from being "absolute truth," is further removed from an ideally complete understanding than the view which, in condemning it, supplements it. For if of two judgments (or systems of judgment) A and B, A overrides B and, in overriding it, reveals where B falls short and the ground of our mistaken acceptance of B, though A may not be "absolute" truth, clearly B will be so still less. B for the future may be disregarded *per se* and in itself. All further investigation will start with A: *i.e.* with B *quâ* overridden, *quâ* altered and supplemented. If therefore I am to overturn the view that "all truth *quâ* truth is absolute," I need not maintain that my own view as to truth is "absolute". I require only to show that my own view does justice to such truth as the opposing view possesses, whilst absorbing it in its own fuller truth. No doubt if we say, "View A is truer than view B," we must have some kind of apprehension of complete truth: and to say that "A covers B and more," involves some sort of notion of what is to be covered and what would completely cover it. But it is not necessary *here* to state *what* kind of apprehension or notion, nor to formulate any view as "absolute". That Euclid's knowledge of a triangle is fuller and more complete than that of the boy who knows only that it is "a plane figure bounded by three straight lines, whose interior angles are equal to two right angles":—this we may surely assume, without asserting that Euclid's knowledge is exhaustive, complete or absolute. And I presume it will not be denied that Euclid's knowledge does full justice to the truth of the propositions known by the boy.

§ 3. (1) Our opponents will welcome the example just chosen. "Quite so," they will say, "Euclid's knowledge does full justice to the boy's. It includes the boy's knowledge and more: but the boy's knowledge remains true and unaltered. Doubtless it is only a part of the complete knowledge of the triangle: but *as a part of knowledge* it is itself true always and without qualification. Euclid knows more parts of the whole knowledge: but his knowledge does not override, annul or alter the lesser knowledge. It adds, supplements and fulfils. And the case is at least as strong in arithmetic. The simple arithmetical truths are unalterably true whether they be taken *per se* and alone, or whether they form constituent parts of the whole system of arithmetical knowledge. ' $2 + 2 = 4$ ' is an immediate and yet necessary truth, an immediate inference, or an *intuitus* as Descartes rightly called it. In such judgments we are stating an implication: and the implication holds unalterably, though fresh implications may subsequently be revealed in our data. The addition of two to two units *implies* the sum four, a plane three-sided figure *implies* the equality of its interior angles to two right angles: and these implications remain, whatever else the data may also imply."

Such arguments, if we are to press them, seem to involve a theory which some at least of our opponents would contemptuously reject. For if *e.g.* in the science of arithmetic there are contained simple propositions, each of which is true *per se* without reference to any others, and true in *precisely the same sense* whether taken *per se* or taken as the basis of further propositions which are inferred from it, what becomes of "the science of arithmetic"? Arithmetic seems to be a whole, some at least of the parts of which retain in the whole the identical character which they possess *per se*. If so, is the advance of knowledge—the development of a science—merely the *addition* of truth to truth? Is geometry neither more nor less than the *aggregate* of geometrical truths: and are the simple arithmetical truths merely "collected" into the science of arithmetic, itself the "class" of arithmetical propositions? To treat a science as a "class," "aggregate" or "collection" of single truths, each of which is what it is in its singleness and remains unchanged in the collection, is (I venture to think) utterly inadequate as a theory of knowledge. It is as if one were to treat the Choral Symphony as a "collection" of beautiful sounds, Hamlet as an "aggregate" of fine ideas, or a picture by Rembrandt as a "class" of colours and lines.

But this is a view which our opponents will reject, and

will attribute to our misunderstanding. "Geometry," they will say, "is certainly not, on our view, a mere class or collection or aggregate of propositions. It is through and through a *system* of truth: and precisely for that reason the parts of that system must themselves be true. The nature of Space reveals itself in every fragment of the Extended. To know a triangle, even if you only know that it is a plane three-sided figure whose internal angles are equal to two right angles, is *so far* to know the nature of Space: and that knowledge is not altered. As you learn more about the triangle and about other forms of figure, you are indeed increasing and completing your knowledge of Space: but this is to confirm and fulfil your previous knowledge, not to condemn nor in any sense to change it. It is your view (and not ours) which renders it impossible to conceive knowledge as a system. For a system implies elements with determinate natures in determinate relations. But in your 'system' of knowledge which is 'the complete truth,' there are no determinate elements or relations, but all is shifting. Or, if you take the elements as determinate, on your view every one of them is false: and a system of falsities cannot be the Truth. If every note is out of tune—or again if each note shifts its pitch to meet the shifting pitch of each of the others—there will be no symphony. And so, unless $2+2$ are 4 and remain 4 unalterably, your 'system' of arithmetical truth will be nonsense."

Now here there seems to be a confusion. For (i.) if, in knowing the triangle, I really knew the nature of Space as expressing itself therein, my knowledge of the triangle would be "complete":—*i.e.* as full and perfect as geometrical science can make it. It might be called "absolute," if it were not misleading to call knowledge of Space (*i.e.* knowledge of the Universe in respect *only* to its extendedness) absolute. But such knowledge of the triangle could not be expressed in a single judgment. It would be complete knowledge of Space in its systematic totality, and nothing short of the whole system of geometrical reasoning would be adequate to express it. On the other hand (ii.) if I know the triangle only as the boy knows it, in that fragmentary knowledge my grasp of the nature of Space is correspondingly vague and subject to modification. Knowledge of the Whole and knowledge of the Parts, where the Parts form an intimate Whole like that of the spatial system, involve one another. But each involves the other at the same level. Immature knowledge of some or all of the Parts is immature knowledge of the Whole, and full knowledge of the Whole is full know-

ledge of each and all of the Parts. Nor is the passage from the boy's knowledge to that of the geometer the addition of perfect knowledge, bit to bit. The passage is not an increase by aggregation, but a growth by expansion from within.

Certainly a System must be a whole of interrelated elements: and the elements and their relations must have distinguishable and determinate characters. But those characters attach to them, and are determinate, *in the System*: and in the System they are certainly not the same as they are outside, if outside they are at all. The notes of the symphony must have and retain a determinate pitch: but their pitch is determined by the functions which they fulfil *in the symphony*. In a sense, no doubt, the pitch of the several notes could be fixed in terms of vibrations without reference to the harmonies which they constitute in the symphony. But the nature of the notes, as constituents of the symphony, is through and through determined by their harmonic relations in the symphony, and is in those relations not what it would be if the several notes were sounded in isolation. And though $2 + 2$ are 4 and remain 4 unalterably, the whole significance of this assertion — *and therefore its truth* — depends upon the numerical system in its totality, and ultimately upon the character of the Universe within which the numerical system is a necessary subject of human thought.

§ 4. But our opponents, as I understand them, would deny our right to the assumption that the truth of a judgment must alter with the alteration of its significance.

"This," they will say, "is the very question in dispute. If you alter the significance of a judgment, you are simply making a fresh judgment. You are not affecting the truth of the original judgment; for that possessed its determinate significance, and in that significance it still is true. Thus the judgment ' $2+2=4$ ' is true, because it adequately expresses certain elements in their relations. It is a form of expression which corresponds to a certain matter of thought: and its truth lies in this correspondence. If you choose to signify something else by this form of expression, your judgment, though linguistically the same, is different in its meaning. You are in fact 'thinking of' or 'judging about' something quite different, and whether your new judgment is true or false has nothing whatever to do with the truth of the original judgment."

I confess that I do not understand precisely the conception of "truth" which the above reply involves: and I suspect that I have not fairly presented our opponents' position. I do not know, for example, exactly what (on their view) are

the two factors whose correspondence is truth: nor whether that correspondence, as they understand it, necessarily excludes varying degrees of exactness: nor, if so, what are the grounds of this necessary exclusion. Accordingly it seems best not to attempt to criticise where I cannot be sure that I have understood, but rather to try to make my own position clear. For it is evident that we have been beating about the bush, and that the real trouble between us is as to the meaning of "truth". It would be impossible, even if I were competent, to discuss this adequately within the limits of an article. But I will attempt to sketch, however imperfectly, what I understand by "truth".

"Absolute Truth," as I understand the matter,¹ remains for us an Ideal which, just because *in one sense* we realise it, we know cannot be completely realised in discursive thinking—*i.e.* in knowledge which proceeds by judgment and inference. For in judging and inferring we set ourselves over against an Other: and our endeavour is to overcome this division, which yet is and remains the necessary condition of our knowing. *Until* this endeavour is accomplished, we shall always be trying to supplement and to alter our system of judgments so as to render it entirely "adequate" to the Other, which it can never exhaustively express. But *if* this endeavour were accomplished, knowledge—*i.e.* judgment and inference—would no longer be, for thought would be no longer distinguishable from its object: the Other, as other, would have vanished, and with it the condition of our knowledge.

As an Ideal we may, I suppose, conceive an Absolute or Infinite Subject, whose being or life is an unbroken movement through the circle of its differences: differences, which are constituted by its own life-movement, and yet in that life-movement are reduced to what they always were or are, *viz.* to moments in the Subject's own unity. We might call that whole movement, as the return upon unity from differences, the "Absolute Self-Consciousness" or "Absolute Truth": but any such expressions are really misleading. For in such an Ideal there is no "Other" and therefore no "Self". And since there is here no movement out of unity to difference which is not *eo ipso* its own recall, there is no "return upon unity from differences". Hence it only confuses the issue to speak of this unbroken continuity of the

¹ The following rough sketch of the conception of "truth," with which I am working, in no sense claims originality. But any errors in exposition must be attributed to me, and not to the writers whom I am more or less consciously following.

life-movement of the infinite Subject as "absolute truth," if by "absolute truth" we are to mean truth which our discursive thought can achieve or even profitably strive after.

We are here concerned with the Ideal of Truth for our discursive thought, the aim and partial achievement of human judgment and inference. This is Truth to which in one sense we always are attaining, or of which (if you prefer to put it so) we always are in possession. But it is Truth which, even if *per impossibile* it were completely achieved, would yet require its object over against it as an Other, and would therefore still not be the Ideal of which we have just been speaking. And again it is Truth which never is completely achieved, but in the possession of which we always are advancing. We, in our different sciences, and also at the different stages of the development of our knowledge in any branch of science, are "in possession" of this Truth in very different degrees. And the criterion for the degree of our "possession" is the relative self-coherence of the science or stage of scientific knowledge in question. In order to prevent misunderstanding, I hasten to add that "the Truth" of which I am speaking is not something to which our knowledge may approximate in various degrees, whilst itself is unchangeable and complete in sublime aloofness and independence of our knowledge. It lives and expresses itself in human knowledge, and in human knowledge only:¹ though the expression is never final nor complete, and varies infinitely in degree. The "complete truth" would be a completely self-coherent system of judgments: and it might be called "the absolute truth," with the double reservation that it remains for us an Ideal, and an Ideal for discursive thought only. For our knowledge, fortunately for us, never actually is a completely self-coherent system of judgments: though fortunately it tends—at least in appearance—to grow in completeness of inward logical coherence. And even if that growth could attain the fulfilment of its ideal, that perfected knowledge would still be a system of judgments and inferences. It would remain the true thinking "about" an object other than itself, and its object would retain in its being features or aspects or qualities which the true thinking could not adequately express.

I am aware that this account will lay me open to many criticisms. I shall be accused, perhaps, of embracing Scepticism without shame or reservation. The denial that dis-

¹ Under "human knowledge" here and throughout I include the knowledge of any finite intelligence there may be.

discursive knowledge can be absolute and final, in the sense in which the complete and undivided apprehension of the infinite subject would be so, might be allowed to pass: though even so my critics will ask whence I derive sufficient knowledge of the infinite apprehension to condemn the Ideal of discursive thought. But I have further denied that the latter Ideal can ever be completely realised: and if that is Scepticism, I must admit that I am a sceptic. But I should ask my critics what it is that they wish to maintain. Do they suggest that a finite intelligence—or all finite intelligences together—can grasp the entire nature of things, and express it in a system of judgments without possibility of omission or error, and without at any point a failure of logical coherence? If to deny this is to be a sceptic, I shall be a sceptic in good company. Or are they merely insisting that the Ideal, which on my view can never be fully realised in our discursive thought, must yet *somehow* be known to us? If so, they are insisting upon something which I have never doubted. But to say that it must be "somehow known" is very different from saying that it must be actual as reasoned knowledge.

Then (I may be asked) can *no* judgment be final and unalterable truth? And, if so, is the judgment that "knowledge is true in so far as it is self-coherent" itself a relative truth, condemned in the end to show itself partly false? And what is the meaning of "self-coherence"? A system, I should reply, possesses "self-coherence" (a) in proportion as every constituent element of it logically involves, and is involved by, every other: and (b) in so far as the reciprocal implications of the constituent elements, or rather the constituent elements in their reciprocal implications, constitute alone and completely the significance of the system. And though I am primarily concerned to maintain that *not all* truth is absolute, undoubtedly the thesis that "knowledge is true in so far as it is self-coherent" carries with it the view that *no judgment* in and by itself is absolutely true. Hence the thesis itself, taken in and by itself, cannot be on my theory the final and complete account of the nature of the truth attainable in discursive thought: nor is it possible to say with complete precision how far and in what manner the final account would involve a modification of the thesis. But I should maintain that any truth is final *for human knowledge*, the alteration of which would render human knowledge impossible. In that sense the doctrine conveyed in the thesis seems to me to be "final" truth; though its expression *in the form of a judgment* is clearly inadequate, and

though that judgment itself is destined to modification if not to complete destruction.

§ 5. The position which I have sketched is open to many other criticisms besides those just mentioned. For I have treated truth as an ideal "which lives and expresses itself in human knowledge, and in human knowledge only": and the whole question as to the relation of the individual and the universal aspects of knowledge and truth is on our hands, if any critic chooses to raise it. But for the present I cannot attempt any further justification of my position. I will draw certain consequences with regard to the mathematical judgments, and then pass on to consider the judgments of perception.

Any judgment—*e.g.* the judgment that "the interior angles of a triangle are equal to two right angles" or that " $2 + 2 = 4$ "—is to be considered as essentially a constituent of a system of judgments. In so far as the judging subject explicitly recognises the dependence of the judgment (in its significance and its truth) upon the other judgments which along with it form such a system, he may be said to read in the single judgment the system which it implies: and precisely so far the judgment possesses for him the most complete truth of which it is in its nature capable. That truth may be called "absolute," "final" or "complete": but it is so only with certain reservations, since no system of knowledge as actual for any human subject is completely self-coherent or final truth. And since "truth" for us means articulate knowledge—for we are speaking of the truth of discursive thought—we must look for such relatively complete truth not in isolated judgments, but rather in explicit systems of judgments: *i.e.* not in the single judgment that " $2 + 2 = 4$," but in the body of reasoned knowledge which we call "the science of arithmetic". The judgment " $2 + 2 = 4$ " may be to the arithmetician a short-hand symbol for the whole science of arithmetic as known at the time: in *his* thinking, it may signify all that could be read in it and expressed by the best arithmetical knowledge hitherto attained. But if so, " $2 + 2 = 4$," as *he* judges it, is very different in its significance and its truth from the judgment of the child who is learning the tables of addition, in spite of the identity of linguistic expression. The relatively final truth, which the arithmetician expresses, attaches not to the single judgment *as expressed*, but to the whole system of arithmetical science which the judgment is for him. And if arithmetical science is to be taken as final and absolute truth for us, that again must mean that in arithmetical

science we read that fuller and more self-coherent system of judgments, which is—as nearly as we can render it in discursive thought—human experience in its essential form. For though the most complete system, which we can attain, falls short of that ideal of self-coherence, of individual systematic totality, which alone would constitute “absolute truth” for discursive thought, clearly no less complete system—a *fortiori* no single judgment—can stand as final and absolute truth.

§ 6. (2) A judgment of perception, such as “this tree is green,” comes in principle under what has been said. What it affirms is subject to a complex mass of conditions unexpressed and yet implied. Its significance, and therefore its truth, must in the end depend upon this inarticulate background. It could claim unalterable or final truth, only if it were entitled to stand as an integral constituent in the ideally self-coherent system of judgments which would be complete human knowledge. And the judgment of perception, as such and as formulated, is entitled less than most judgments to claim such a privilege. For the judgment of perception is the product of a comparatively low grade of experience. It does not persist as such and unaltered in the thought which has risen above the level of everyday conversation, of historical narrative, of matter of fact, and of the practical affairs of life. Even here, indeed, there is more than the judgment of “this” “now” and “mine”: and the more does not leave the judgment of perception pure and unadulterated and without internal modification. And at any rate the judgment of perception is a totally inadequate vehicle for the expression of knowledge which has any claim to be exact. In the main, and broadly speaking, scientific thought moves in universals. “This” and “that,” and the distinctions fixed by reference to the individual subject, give place in science to reflective determinations, which are revealed by analysis in the sensuous given, but which are not identical with it. Knowledge, in short, begins with the discovery and the formulation of universal and necessary connexions of content. And the advance of knowledge leaves no vague sensuous subject (no “this tree”), no vague sensuous attribute, and no mere coincidence of attribute and subject. The more adequate knowledge of “this tree” is not an accumulation of judgments of perception, but a revolution in which “this tree” is swept away and determinate connexions between determinate universal concepts are substituted. In the science of botany our judgments of perception *as such* find no place.

Nor will it do to protest "But the fact expressed in the judgment of perception remains unalterable. For suppose our knowledge to expand until it covers all Time and Space: suppose even that it becomes Omniscience. Yet, within that complete and all-embracing experience, the original judgment will persist as a clear, if somewhat attenuated, truth:—a thread of pure gold within the infinite consciousness." There is indeed a sense in which this contention is true: but in that sense it hardly seems relevant. Omniscience, we may admit, must be knowledge of everything: and in the infinite experience nothing can be lost. And so every fact and every feeling—everything in any sense real—as an element in that experience is invested with the timeless necessity which defies change or destruction. Nothing, we may agree, is "lost": and in this sense the past and the future "are" no less and not otherwise than the present, error and sin possess the same necessary being as truth and goodness, and there is no difference between the trivial and the important.

But *in what precise sense* is the fact expressed in a judgment of perception unalterable? "This tree is green" expresses what is matter of immediate experience to you here and now and to other sentient subjects under the same conditions. It is true within a narrowly restricted area: and beyond that area its truth is liable to modification and perhaps to destruction. The experience, and the expression of it, are no doubt necessary incidents in the world-process, or necessary elements in the infinite experience. But they are "necessary" precisely as and when and how they occur in the process or subsist in the experience. In so far as the infinite experience is complete and all at once, all the elements thereof are *for the infinite subject* timelessly actual. But in so far as the infinite experience appears as a world-process and unrolls itself in time and space, the elements have that actuality which belongs to them as such appearances: *i.e.* they occur under determinate limitations of time and place, and not otherwise. Thus the immediate experience and its expression in the judgment of perception are "unalterable facts" in their actuality: *viz.*, as possessing their determinate position in the series of events. And if the world-process were, so to say, to go back upon itself, and to unroll its series of events afresh from the beginning, these experiences and their expressions would recur in their positions with "unaltered" actuality. The mummies would walk the earth again, and give expression to their feelings in "the same" judgments of perception that were passed by the

ancient Egyptians : and thus (but not otherwise) the "unalterable truth" of a judgment of perception might be vindicated. For the judgment "this tree is green" expresses what is actually matter of direct experience to you and to other sentient subjects. A hundred years hence you and your vision, they and their experiences, "this" tree and its state, have vanished into the past : and cannot for human knowledge be restored *as such*.

It is irrelevant to insist upon the ineffaceable reality of all the elements of the infinite experience : and it is a confusion to identify their "reality" as elements in that experience with their "truth" as entering into the texture of human knowledge. The sentient subjects of the past, their immediate experiences, and the "truth" of their judgments of perception as expressing those experiences, have as such vanished for us. They are at best for us the precarious products of a most elaborate inferential reconstruction, which in any case can never actually *reinstate* them. But the matter of their experiences as the content of their judgments has passed over into the fabric of our knowledge. In that fabric their judgments of perception persist and cling to life. But the distinctive features of those judgments, their individualities, are lost : and the life, to which by a metaphor you may say "they cling," is not *their* life which they formerly enjoyed. The sciences of botany, of the physiology of the senses, of the physical conditions of colour, etc. :—these may be said to absorb and to preserve the "truth" of such judgments as "this tree is green". But the sciences neither contain any judgments of perception *as such*, nor preserve their "truth" in an unaltered form.

§ 7. (3) Of the negative judgments which were quoted in § 1, the first ("I did not play golf yesterday") does not require any special consideration. It comes in principle under what has been said about the judgments of perception. The "yesterday" and the "I," to which the judgment refers, will vanish : and though they may in some sense be reconstructed by a system of inferences, they will never be *as such* reinstated. And even if the "truth" of the original judgment is preserved in the sense that its content is absorbed and used as material for a system of knowledge, the judgment most certainly is not enshrined there as an unaltered truth in its ancient form.

In the second example ("the walls of this room are not a mile apart") a further point more clearly emerges. For the knowledge which that judgment conveys, or the truth which it expresses, is obviously not what it carries on its face. It

professes to give us a decisive piece of information, though in a negative form. Really it gives us a vague and indeterminate positive, which the negation implies and on which it rests. The implied positive information is so vague that it can hardly be stated. For in order to state it at all clearly, we should have to rise above the level at which the negative judgment could significantly—or indeed sanely—be made. But as our knowledge of the room grows in definition and completeness, the implied positive develops into the completer affirmation "the walls are twenty feet apart". And in the greater significance and fuller truth of this positive judgment, there is in no intelligible sense a "survival" of the "absolute truth" that the walls are not a mile apart. The walls of this room "are not less than an inch apart," they "are not made of gold," nor are they "formed by elephants standing shoulder to shoulder": but is it really suggested that complete knowledge of the walls and their relation contains all these "absolute truths" surviving in itself?

I am not maintaining that in an ideally complete system of knowledge the negative judgment can find no place. On the contrary, I am firmly persuaded that "System" is meaningless without distinction, and that negation is no less indispensable than affirmation in discursive thought. But the apparent finality of the negative judgment in the instance quoted is due to the thinness of the positive content implied. The judgment in fact approximates to the "infinite" judgment. And we must not infer from its apparent decision that it expresses an absolute unalterable truth. Whatever distinctions may or may not persist and be emphasised in the system of knowledge as it grows in concreteness and self-coherence, clearly negative judgments of the type which has been instanced are trivial and provisional and have no special claim to finality.

II.—ON THE PSYCHOLOGY OF A GROUP OF CHRISTIAN MYSTICS.¹

BY JAMES H. LEUBA.

I.—THE RELIGIOUS TENDENCIES OF THE CHRISTIAN MYSTICS.

FROM the psychological point of view the most characteristic trait of the Christian Mystics is what may be called their 'inward-mindedness,' *i.e.*, the preponderance in their consciousness of the sensations, ideas and feelings of subjective origin, to the detriment of the sensations, ideas and feelings determined more or less directly by, or referring to, the outside world. Prof. Royce has said of the Mystics that "they are the only thoroughgoing empiricists," and quite correctly, provided it be understood that the field of their empiricism does not include the objective world. Inner experiences hold their attention first and last. They are thus at the opposite pole from those persons whose stolid substance is rarely disturbed except by the impact of the external world.

The rare possibilities of an unusual sensitiveness to what goes on within that portion of ourselves correlated with the sensations, feelings and ideas referring to the self rather than to the physical outer world, are obvious. It is to this temperamental disposition that the Mystics owe their most noteworthy peculiarities. Those to which I desire to draw your attention during the first part of this paper take the

¹ A paper read in part before the American Psychological Association at its annual meeting, Washington, D. C., 1902. The first part of it is little more than a series of notes upon the tendencies of the Christian Mystics. The second part—the one dealing with the interpretation of the mystical experiences—is a little fuller. Let the reader bear in mind that I deal here with only a few of the most important Christian Mystics: Mme. Guyon, François de Sales, St. Theresa, Ruysbroeck, Suzo and Tauler. I do not inquire how far the statements referring to them are also applicable to the other varieties of Mystics.

For a more complete and detailed study of these Mystics see my two articles in the *Revue Philosophique* for July and October of 1902.

form of a deepening, an intensifying of four of the needs or tendencies found everywhere among civilised peoples. Two of these are of very great interest to the student of human development. I have called them, respectively, the tendency to organic enjoyment and the tendency to the universalisation of action.

I am going to pass these four tendencies in review, beginning with the two less significant ones.

1. *The Need of Mental Peace, of Intellectual Unity.*

Among the Christian Mystics this need finds at all times some satisfaction in the control exercised by the idea of God upon the stream of consciousness. But it is chiefly in the daily exercises of Meditation and above all in the rarer moments of Ecstasy that the unification of the mental contents is obtained, and then not by the reconciliation of opposed elements, the gaining of more general principles, but by the simpler method of elimination. The simplification of the mental life frequently ends for the Mystics in a monoideism, or even in the total absence of all ideational contents. The person is then in a state of trance.

2. *The Need of an Effective Support.*

The intense need of moral help, of loving support, felt by the Christian Mystics, generates in them a keen and persistent sense of the presence of the *Great Comforter*, as Romanes called Him. Their particular sensitiveness makes it possible for them to *feel* Him and not only to conceive of Him or to see Him in visions. In the higher degrees of the *orison*, God is no longer thought of, He is owned by the devout soul; He comes to her, dwells with her and fills her with a surpassingly sweet sense of security and peace. The intenser feeling of a wider, more powerful, more loving Presence supplants father and mother, wife or husband. The consciousness of the presence of God is to the Christian Mystic what the control exercised by the hypnotiser is to his subjects, with an unbounded measure of confidence, admiration and love added to it.

3. *Tendency to Organic Enjoyment.*

In renouncing the work of the flesh—as most of the great Christian Mystics have done—they do not give up the passionate enjoyment which it yields. They are still ready, nay eager, to secure carnal delights, provided it may be obtained otherwise than through the ordinary channels of sexual

gratification. One of the greatest attractions of Mystical ecstasy is the presence in it of those voluptuous feelings.

Ecstasy is, as we shall see, a love trance, as far as our Mystics are concerned. Saint Theresa tells us that she usually enjoyed intoxicating delights in the company of Jesus. Ruysbroeck declares that "the pleasure is greater, more voluptuous, *for the body* and for the soul, than all those the world may give". This experience is not peculiar to one or another of the Christian Mystics; it is a trait common to them all. The voluptuous excitement in which they are at times plunged may be paralleled only by the most passionate physical love. Mme. Guyon, frigid towards her husband, wrote of Jesus Christ, with whom she had contracted a so-called mystical marriage: "I love Him so that I can love no one but Him. I have lost every other inclination or appetite." Speaking later on of that period of her life, she said: "I was like one of those drunkards, or one of those lovers who think only of the object of their passion".

For information as to the physical seat of this pleasure we may go to Saint Theresa herself. She had at times angelic visitors. Once the vision of a very small and very beautiful angel was granted her. He held in his hand a long golden shaft tipped with fire. Every once in a while he would plunge it into her heart and push it down into the bowels. As he withdrew it, it was, says she, "as if my bowels would be torn away and I was left burning with the love of God".

Take in connexion with the preceding the interesting case quoted by Havelock Ellis in his *Psychological Study on Auto-Erotism*. A woman physician, a disciple of the 'Brotherhood of the New Life' founded by T. L. Harris, described thus one of her religious experiences. "One morning, I awoke with a strange new feeling in the womb, which lasted for a day or two; I was so very happy, but the joy was in my womb, not in my heart." The difference between these two experiences, as far as the point at issue is concerned, is that the woman physician says womb and the Spanish saint says bowels.

The sexual origin of at least the most intense and highest (according to their own valuation) of the divine raptures cannot be denied. They result from the setting into activity of at least some of the organs of the sexual life, to an extent varying with each person, and always without his knowledge. It is a distinct form of erotomania.¹

¹ There are other possible sources of intense organic enjoyment, independent of the sexual life. See the *Revue Philosophique*, Oct., 1902.

Concerning this tendency and the satisfaction given to it by the Mystics three points must be briefly noted.

(a) If the Mystics refuse their body the ordinary satisfaction it craves, it is not because of the unholiness of the pleasure itself, but because sexual passion, even when within legitimate bounds, places one so frequently and, usually, so irresistibly, in opposition to the finer moral promptings. Therefore it is their chief enemy. Observe that in this they do no more than carry out consistently, but to an extravagant issue, a struggle the appearance of which marks the dawn of civilisation. They are the champions gone mad of the civilised world in its great, and mostly secret, battle against the evils of the flesh.

(b) Erotomania—we need not shrink from using the term—is here in the service of lofty ideal ends. As the enjoyment does not come from practices guilty in their eyes, but, on the contrary, from the vivid realisation of the surpassingly great love to them of an absolutely good God, its effect is elevating rather than debasing; it becomes a strengthener of holy resolves; it cements together the tendencies according to the will of God and increases their power. Allow me to recall in this connexion the opinion held by many among those who have paid serious attention to the relation of the sexual function to psychic life, that the irradiation of sexual energy when deviated from its ordinary channel of discharge accounts for much of the growth of the higher mental life.

(c) The physiological mechanism of sexual life is, of course, too solidly established and, moreover, the yearning for the rapturous thrill of the flesh, is too strong and in itself too innocent to permit of the sudden elimination of that part of our nature. But the Christian Mystics have found a way of gratifying both the needs of the body and of the soul, and at the same time of avoiding the moral danger lurking in the ordinary way of giving them satisfaction. This course is erotomania with the idea of Jesus, the Virgin Mary or God as respondent.¹

I like to look upon this phase of the life of the Christian Mystic as an experiment tried by human nature to bring the sexual life more completely under the control of the higher nervous centres and thus to make it serve for the furtherance of that to which the individual ascribes greatest worth. I need hardly add that this is not 'a re-interpretation of Religion as perverted sexuality'; it is merely a singling out of *one of the factors* prominent in the religiosity

¹ I am not now concerned with the physiological disorders to which such a practice as this might give rise.

of a group of *Christian Mystics*, coupled with an attempt to interpret its effects.¹

4. *Tendency to the Universalisation of Action to Ethical Unity.*

Whatever importance may attach to the preceding motive, the chief significance of Christian Mysticism belongs, it seems to me, to the heroism of their unremitting efforts in favour of universalised conduct, *i.e.*, of action proceeding from generalised motives. Their own habit is to designate such conduct as the performance of God's will.

They differ with reference to this point from the ordinary well-intentioned man, in that to the Mystic compromises are intolerable where the will of God is concerned. The life of all of them is for most of its duration a fierce struggle against the tendencies of the so-called *Natural* man; not that these primitive tendencies are in them stronger than in other persons, but that the yielding to them is never sanctioned by the higher self. The strife between the lower and the higher motives assumes in the Christian Mystics a keenness rarely equalled in other classes of men.

In respect to this fourth tendency the Mystics mark, on the whole, a step in advance, since what distinguishes them is the greater motive power of those altruistic, those universalised, ideas more and more generally recognised, in civilised societies, as the desirable guides of action. What is usually mere limp desire or impotent inclination has become in them unconquerable, if not always victorious, impulse. The highest good they recognise has at its service a psycho-physiological imperative mechanism; the 'ought' is backed in them by a compelling motor force. This is probably the most valuable fruit of their particular sensitiveness to inner events.

II.—MYSTICAL ECSTASY.

Urged by these four tendencies the Christian Mystics have come to practise a peculiar religious exercise called *Orison*.

¹ See a long footnote on sex in Religion, pp. 10-12 of *The Varieties of Religious Experience*.

On the whole I find myself in agreement with the opinion of Prof. James on the relation of Neurology to Religion. I believe, however, that he has not ascribed to the amatory desires the place which belongs to them in the religious consciousness of those Mystics with whom he is chiefly concerned in the chapter on Mysticism. If sex does not make religion it often gives it its particular form. It is, for instance, chiefly to the predominance of the love passion that Suza, Ruysbroeck, Mme. Guyon differ so markedly from the cold, objective type so impressively represented by Calvin.

It is, in its lower degree, a meditation upon God and, in its higher, a trance looked upon by them as union with Him.

I do not think that a more remarkably effective way of giving satisfaction to the four tendencies we have enumerated could have been devised than this one, although it is merely the result of empirical wisdom. Let me put before you in a rapid sketch the changes which take place in consciousness during the journey of the soul to God. Several great Mystics have left minute and subtle descriptions of it, and, however they may differ in points of detail, they are at one as to those larger features with which I am going to deal. I shall follow St. François de Sales (*Traité de l'Amour de Dieu*) and Mme. Guyon (*Moyen Court et Facile de faire Oraison*).

In Meditation, with which *Oraison* begins, the soul seeks motives of love and takes delight in them, says St. Francis, and Mme. Guyon adds that the end is not to analyse and reason, but "merely to hold the attention" upon the subject of the meditation. When this is secured the soul passes to the second degree: *Contemplation*. It is defined as "nothing more than a simple and permanent attention of the mind to divine things; a consideration of the loved object as a whole," in a lump as it were. Mme. Guyon emphasises the importance of holding the attention upon God, not by the understanding, but by the affections. They all agree in saying that whereas Meditation requires some effort and mental activity, in Contemplation the soul has become passive. There is in it greater pleasure, since God and His great love have been found. "The soul is so quietly attentive," says St. Francis, "to the kindness of her Beloved, that she seems hardly attentive at all."

This mental quiescence and the amorous enjoyment grow as the *Oraison* becomes deeper. A little farther on, when the state called by St. Francis "Amorous quietude" is reached, "the soul remains, as it were, deprived of life; it is only with difficulty that she can speak and answer; all her senses are benumbed". Nevertheless, although she can hardly answer, she still hears God speaking to her. On certain occasions it happens that the trance goes as far as absolute unconsciousness: "The soul," to quote again from St. Francis, "ceases even to hear her beloved; she does not even feel any sign of His presence. Then, the soul on awakening, may well say: 'Truly, I have slept with my God, in the arms of His divine presence and I knew it not'."

In this progress of the soul, the two great periods observed in hypnosis are clearly marked: the loss of muscular

control and later the loss of sensory perceptions. It differs from the ordinarily induced hypnosis in that it is dominated throughout by the feeling of love. This is because the person upon whom the attention is concentrated is first of all an object of love. The mystical ecstasy is then a love trance, more or less profound, in which the idea of God, or of Jesus, or of the Virgin, takes the place of the hypnotiser.

What I desire particularly to point out is that the so-called 'higher,' most excellent, religious exercise of the Mystics gives them at once mental peace, a vivid feeling of the presence of the Great Comforter, the delights of passionate love and, moreover, brings with it a strengthening of all the tendencies that are believed to be in accordance with God's will.

When we want ineffective desires to triumph there is no more powerful means at the command of science than to induce hypnosis and then to suggest the wished for victory. Now the Mystics have developed, in their endeavour to satisfy their needs, a method of worship which places them, while under the control of the God-idea, in a condition of increased suggestibility. They become clay in the hands of the potter. The value of this control depends, of course, upon the contents of their consciousness of God.

Allow me to add, that in all religions the attitude looked upon as most divine is one of increased suggestibility, induced either by drugs, by violent physical exercise, by concentration of the attention upon some point of space, or otherwise. So that the most general and, in my opinion, the most significant statement which the psychologist can make regarding the religious attitude par excellence is that, among all peoples and at every degree of their development, it is a trance dominated by tendential ideas, not everywhere the same, but expressing always the needs accounted highest by the individual or by the society to which he belongs.

The more ordinary religious consciousness, as, for instance, the one characteristic of ordinary worship, is an approach towards the seldom realised perfect religious attitude.

III.—THE MYSTICAL ECSTASY AS REVELATION AND AS UNION WITH GOD.

Let us ask now, in the third and final part of this paper, what meaning the Mystics give to the religious ecstasy, and how far, or in what sense, their opinion is justifiable. The interest of what I have to say here will be much increased if you happen to have present in mind the views of Prof.

William James on this point. I regret that time has not permitted me to refer more particularly in the course of this paper to this author's illuminating analyses and perplexing conclusions.¹

Regarding their trance the Mystics make two affirmations of the highest consequence. It is, they say, (a) *a revelation*, (b) *a union with God, or an identification of the individual with the Absolute Essence*. It is to these interpretations that they owe a large part of their celebrity.

First, concerning the revelation, there are at least four different kinds of experiences entering as part-explanation of the belief in the transcendent, unutterable revelations received by the divine lover during his ecstasies.

1. In the love trance the feelings and the will of the individual come into unison with the feelings and the will attributed by him to God. As mental activity decreases with the deepening of the trance, the feelings and desires belonging to the subject and those ascribed to God, are no more held separate; they necessarily fuse together, leaving but one being: man and God in one. This is well described by St. Theresa. "My *Orison* did not take place in my head; it was an *Orison of enjoyment and of possession in the will* . . . all distinctions disappeared, there was nothing but a desire for deeper love, without the presence of any motive or ground for loving." Mme. Guyon wrote, speaking of one of her *Retreats*: "là tous les entre deux furent consumés, il se fit un vrai mélange de l'Amant et de l'Amante de telle sorte qu'ils furent faits une même chose". Parallel passages are to be found in the writings of all the Christian Mystics.

The impression of intimacy resulting from the fusion of one's own feeling and will with those ascribed to the divine would be in itself quite sufficient to lead most people to the belief that there had been an intellectual penetration of the divine mystery, even though they should be aware of the fact that in the higher degrees of *Orison* the mind is inactive. St. Theresa is a good illustration in point. She actually attempts a description of God; she tries to give intellectual form to the very revelation she has declared to be entirely in the realm of the feeling and of the will. Her most successful attempt is ludicrous enough. Here it is: "I shall say then that the Divinity is like a diamond superlatively clear and much larger than the world; or like a

¹William James, *The Varieties of Religious Experience*. See especially Lectures xvi., xvii., xx. The articles of the *Revue Philosophique* to which I have referred were written and the first of them published before Prof. James's book appeared.

mirror similar to the one in which the soul was shown me in the preceding vision; only so much more sublime that I have no words to describe it".

2. The love feeling and the god-like attitude of the subject persist for a certain length of time after the trance. This may legitimately be described as an *inspiration* and an *illumination* since, on recovering, the understanding sees more clearly the will of God and the will performs it more readily. It is no doubt in this light that many passages, apparently claiming something more, should be interpreted, as, for instance, the following statements of Eckhart: "I have in my soul a power that enables me to perceive God . . . nothing is so near to me as God. He is nearer to me than I am to myself."

3. Here is how Tauler describes in his sermon for Whit Sunday another of the experiences which contribute to the belief in a revelation: "When all the powers of the soul are collected and turned inwards, it often happens that some eternal truth presents itself with irresistible clearness. This happens not unfrequently in morning sleep just before awakening." This last remark is perfectly correct, as psychologists well know. But, at least in the case of the Mystics we are studying, nothing remains on awakening but the *feeling* of a glory that is no more, the *feeling* of having entered the Holy of Holies or the *feeling* of having encompassed the deepest philosophical mysteries. Nothing but the after-taste of glorious dreams remains when the intellect returns to its task.

The psychology of this illusion is not doubtful. Three things only are necessary to produce it: (1) The inhibition of the ideas which, in waking life, ordinarily oppose themselves to a too summary solution of the problem considered; (2) A feeling of ease and of power which may, in part, and perhaps in entirety, be due to the just mentioned inhibition; (3) An affective condition compounded of the tender feelings and of awe. The first and the second of these three conditions occur commonly in sleep, and the third is the unfailing accompaniment of the mystical trance and this for reasons now well understood.

4. The Mystic is at times favoured with auditory or even visual hallucinations. God speaks to him comforting or guiding words. Here we have no doubt an intellectual revelation. But if the moral guidance they receive constitutes the whole of the mystical revelation, little fuss need be made about it. God can glean no glory from having anything so completely common-place (in as far as its in-

tellectual aspect is concerned), so entirely within the possibilities of ordinary mortals, attributed to Him. As a matter of fact, their claim soars far above what could be granted on that score and this on account of the other non-intellectual experiences already mentioned. The conception of sub-conscious brain activities or of subliminal personalities may easily be turned into account in an explanation of guiding hallucinations.

The matter, then, stands thus for our Mystics: On the one hand, they are convinced that God reveals Himself to them, and, on the other, they find themselves unable to give definite verbal form to the supposed revelations. It is an easy step from this to the well-known conception of a mysterious faculty above reason to which the Revealer addresses Himself. Ruysbroeck, for instance, affirms in the *Spiegel der Ewigher Salicheit* that "when manifesting Himself the Father elevates the soul above the reason, in the Void without image. There the soul is simple, pure and without any content, and in this pure vacuity the Father brings forth His divine light. In this light neither the reason, nor the senses, nor observation have any share."

The belief in the mysterious, unutterable, *knowledge* obtained in ecstasy is shared not only by the Christian Mystics but more or less by all those to whom the name Mystic is applicable. It is one of the most deeply rooted of religious superstitions. Its fourfold root is, as I have tried to make it out:—

(1) The feeling of intimacy with God arising from the bond of love and from the disappearance of all desire or tendencies opposed to His will, as understood by the subject.

(2) The clearer understanding of God's will *after* the ecstasy, and the greater ability to perform it.

(3) The illusory intellectual illumination resulting from inhibitions in the ordinary antagonistic developments of associations, and from a feeling of ease, of power.

(4) The visual and, especially, the auditory hallucinations.

I pass now to the second claim which is at the same time the fundamental philosophical doctrine of Mysticism. The 'sleep of the powers' is, they tell us, a Union with God,¹ a synthesis of the individual spirit with the Absolute. This doctrinal statement is, of course, not a mere description of their bare experience; it is an interpretation. The question before us is, in what sense is this construction admissible,

¹ Pfleiderer somewhere defines Mysticism as the feeling of the union of the self with God.

or, if you prefer, why should they interpret thus a particular experience?

A full answer to this query would require a careful study of the mystic trance and an examination of the notion these people have of God. I shall for brevity leave the first part of the inquiry as it stood at the conclusion of the section on ecstasy and address myself directly to the second.

The Primordial Being is, according to Eckhart¹—the most speculative of our group of Mystics—the simplest substance. He calls it *Grund*, *Boden*, *Wurzel*. It is neither this, nor that, it is the Being without being—*das Wessen ohne Wesen*,—above all existence. Nothing may be predicated of Him because that to which a predicate may be attached is, in so far, determined and therefore is not yet God. As to God's creations, they have no real existence as individuals; they exist only in as far as they are integral parts of the *Grund*.

Boehme, Suzo and Tauler are, in a general way, in agreement with Eckhart. Boehme, for instance, uses the term *Urgrund* to name the Essence; he describes it as without form, absolutely indeterminate; it is unity and perfect identity; it is nothing; it is the abyss, the infinite.²

Now, the condition of a person in a mystical trance comes very near this negative definition of God. You remember that as the ecstasy deepens, the intellectually apprehended distinctions lose their sharpness of outline and finally disappear in an undifferentiated homogeneity. The multiplicity of existences is replaced by a Great All, simple, without attribute, mysterious, infinite. Why then should they not identify the trance state with God?

But we find ourselves here face to face with a monstrous absurdity. In itself the *completed* mystical trance is nothing (since in it the loss of consciousness is absolute). It is not even that substantial Nothing which in certain metaphysical jugglery is made into the Essence of Being, but a Nothing which has no existence. How comes it, then, that this state of non-existence is identified with God; through what magical art can enough reality be injected into it to make it synonymous with the fulness of the divinity? The entranced soul described by our Mystics as naked, absolutely empty, etc., is to them, nevertheless, not the equivalent of non-

¹ *Prædigten* and Stoeckl's *Philosophie des Mittelalters*.

² See a chapter on Boehme in Boutroux' *Études d'histoire de la Philosophie*.

It is impossible to say how far this conception of God is modelled upon the trance state itself.

existence. It is after all something more because of the following circumstances. When, self-consciousness having returned, the soul thinks of the preceding moments it becomes aware of a break in its life, of a void, of a nothing. This nothing is transformed into an existent something by the very fact that it has become an object of thought. It is henceforth the non-existent which nevertheless exists: the unconscious trance has come to enjoy that particular kind of reality which the mind gives to all its objects. Only—and here is the error of our Mystics—this nothing-thought-of is by no means the same as the absence of consciousness constituting the void.

But this is not yet the most potent reason accounting for the identification of a something of which nothing may be predicated, with the Divine Substance. An observant reader is struck, even in the most philosophical of the Mystics, with the anomalous presence in their definition of God of certain significant words. Eckhart, for instance, occasionally uses the expression Eternal Silence, to designate the *Grund*. He speaks of the Eternal Silence reposing in himself, and Boehme affirms that the *Urgrund* is all silence, repose, eternal peace; more than that, it is free from suffering; yet more than that, it is "the Eternal Good, eternal sweetness, eternal love".¹ Here is indeed a Nothing sufficiently well filled with positive qualities to make of it a legitimate object of desire! If, then, the Mystics desire union with God it is not, as might have seemed at first glance, because He is the All of which nothing can be affirmed; not in the least. Mystical philosophers are no fonder of emptiness than other men. If they woo the Absolute it is after all because in Him some of the deepest human tendencies find their satisfaction. For the Christian Mystics God is, philosophical utterances to the contrary, at least *peace bathed in love*. And what is that but a love trance? They assimilate God with the most blessed experience with which they are acquainted; they make Him in the image of the divine moments which precede and follow the loss of consciousness in ecstasy.

Allow me, in conclusion, to quote a short passage from the *Journal* of the Genevese Philosopher, from which appears clearly enough what 'possessing God' really meant to him. "For an hour past I have been the prey of a vague anxiety. I recognise my old enemy. . . . It is a sense of void and anguish; a sense of something lacking: what?"

¹ Boutroux, *loc. cit.*

Love, peace,—God, perhaps. . . . Of all the hours of the day, in fine weather, the afternoon about three o'clock is the time which to me is most difficult to bear. I never feel more strongly than I do then 'le vide effrayant de la vie'". The passage is dated 31st March, 4 P.M., *i.e.*, about the hour of lowest vitality.¹

¹The utterances of St. Augustine upon the Divine Substance are quite interesting in this connexion. Récéjac has gathered them together in a note to page 133 of his *Fondements de la Connaissance Mystique*.

See also how Maine de Biran describes the presence of God. *Maine de Biran, sa Vie et ses Pensées*, by Ernest Naville, 1857, pp. 316, 324.

III.—PROF. JAMES ON 'HUMANISM AND TRUTH'.

BY H. W. B. JOSEPH.

PROF. JAMES is not the godfather of Pragmatism, and he acknowledges that in its grown form it is not of his rearing. But he was foster-father once; and most readers probably knew of the theory first through him. If they failed to understand clearly the philosophical position indicated, the fault may not have been altogether theirs; for the indications were slight and fragmentary. But they must have been the more pleased when they saw that he had devoted an article to explaining what, in his view, Pragmatism means. The theory has indeed lately changed its name; but Humanism is a word of ancient and distinguished history; and one may be pardoned if one does not willingly take part with those who would unnecessarily wrest it to a new and unconnected meaning.

This paper aims at nothing more than to examine the article of Prof. James. If I tried to state what the doctrine of Pragmatism seems to me to be, and were to examine that, I might be told I had misunderstood it. I am content to consider what it seems to Prof. James to be; and play (if I may use his own expression) with the conception he has put forward.

He begins by referring us to the opinion of Mr. Peirce. "If it can make no practical difference which of two statements be true, then they are really one statement in two verbal forms; if it can make no practical difference whether a given statement be true or false, then the statement has no real meaning" (p. 457). Pragmatism meant, as Prof. James originally used the term, a method of carrying on abstract discussion which applies the above principle to the determination of controversies; for where the practical consequences of the truth of two propositions are the same, or nil, there is nothing to quarrel about.

But this 'pragmatic method' of dealing with controversies is distinguished from the more thorough-going pragmatism

which has been developed in England. The former holds that "truths should *have* practical consequences"; the latter, that "the truth of any statement *consists* in the consequences, and particularly in their being good consequences" (*ib.*).

I am not clear about this distinction. What is meant by saying that "truths *should* have practical consequences"? It cannot be meant that they ought to have them, but sometimes don't; nor can it be meant simply to say that they *do* have them. It must be implied that they are no truths unless they have them. Now if the truth of a statement *consist* in its practical consequences, it is at least clear that a statement that has no practical consequences cannot be true; though the position is on other grounds difficult to maintain. But if the truth of it be one thing, and the having practical consequences another, the first cannot depend for its possibility on the second.

In order to see this, we must distinguish between a statement, and the truth of a statement. It is clearly absurd to say that the truth of a statement consists in the consequences of its truth; for in the very act of identifying its truth with its consequences, you are opposing them to one another. And it is not less absurd to say that the truth of a statement, though not identical with its consequences, depends for being on them. It may be that there is no fact which could be otherwise than it is without involving consequences that would affect somebody in a way to make us call them practical; but to say this is not to supply any criterion, by which to judge whether a given statement is capable of truth or falsity. It could justify us in saying that the truth or falsity of any statement must make a practical difference somewhere; but not in saying that the statement was unmeaning because we had not found that difference, or that two statements meant the same thing because we could find no practical difference in their consequences.

That truths do have practical consequences may be believed; but if so, we shall believe in the consequences because we believe in the truth, but settle the question of truth or falsehood independently. That they should have practical consequences, if it means anything else than that they do have them, must mean that a statement is true because it (and not its truth) has practical consequences; and that is to make the truth of a statement consist in its practical consequences.

Now though this position is not self-contradictory (as it is to say that the truth of a statement consists in the practical consequences of its truth) it is very difficult to understand it.

What are the consequences of a statement, as distinguished from those of its truth? I can only think of two senses in which the expression might be used. They may be the consequences of the belief of the statement. But to believe a statement is to believe that it is true; so that its truth again becomes something which we are bound to conceive as different from its consequences, even in professing to identify it with them. Secondly, they may be the reaction to which the statement psychologically prompts a man. When I say 'rats' to a dog, it begins sniffing and prying; yet the dog can hardly be credited with believing it true that there are rats in the room. It is possible—I do not say that it is profitable—to attempt to apply to the human mind a psychological treatment which ignores the distinctive character of logical operations; to treat the belief in a judgment as the force of an 'idea,' and to regard the idea as a mere psychic fact or presentation. From this point of view, a statement might be called true, when the reaction to its 'apprehension' was beneficial. It may be noted that the *truth* of a statement would consist not "particularly" but exclusively in its consequences being good: for consequences, without reference to their being beneficial or the reverse, would not distinguish its truth from its falsehood, since contradictory statements might both prompt to some reaction.

Of course, a 'statement' so regarded is not really, for the person reacting to it, a judgment at all. And it is impossible to apply this conception of truth to the judgment which enunciates it. Just as scepticism exempts from its suspicion the reasoning by which it is supported, so when I say that the truth of a statement consists in the goodness of its consequences, I exempt this statement itself from the scope of my definition. Otherwise, the truth of this statement itself would consist in the goodness of *its* consequences; and thus we have a further and prior statement about it, which must be true; and unless we somewhere admit a statement whose truth is something different from the goodness of its consequences, we are involved in an infinite regress, and can never get a real *judgment* at all.

Now Prof. James is "almost sure" that the authors of the "wider pragmatism" are right in their main contention—*viz.* (for the words are his, and not mine), "the notion that the truth of any statement *consists* in the consequences, and particularly in their being good consequences". He cannot mean that the truth of a statement consists in the consequences of its truth, or in the consequences of believing it true. Will he admit that he means that it consists in the

beneficial nature of the reaction to an idea considered as mere presentation, and not as being true or false? I own that I have sometimes suspected pragmatist writers of holding such a view; they show a tendency to reduce logic to psychology, and to apply the theories of evolution which thought has elaborated to the explanation of thought itself. Yet I cannot believe that Prof. James will admit such a definition of truth when nakedly presented; and if not, what does he understand by the main contention of the wider pragmatism?

Prof. James holds that pragmatism "owes its being to the breakdown which the last fifty years have brought about in the older notions of scientific truth". He seems to think that in altering our judgment of the truth of what the sciences teach we have altered our notion of what truth means. But that need not be so. He suggests that the new definition of truth is based on an induction; but such an induction would beg the question. Are we to suppose that, having discovered the truth of this or that statement to consist in the goodness of its consequences, we may then conclude the same of the truth of any statement? The inference presupposes logical truths whose nature is not to be submitted to the induction. But how are we to ascertain the particulars upon which the generalisation rests? Can experience show us that the truth of a particular statement consists in the goodness of its consequences? it can at most show us that the consequences are good. In experience we may rise to the use of a new conception; but experience can never show us what we mean by it.

Prof. James indeed speaks as if every conception was an hypothesis. He makes no distinction between such a conception as the ether, and categories without which thought would be altogether impossible. "The main forms of our thinking . . . are purely human habits." Is this true, or has he only a habit of thinking so? The position is familiar to readers of the last chapter of his *Principles of Psychology*; but in an article headed 'Humanism and Truth' we should expect the standpoint of Logic.

It is very difficult to make out how the forms of thought which have become habitual have been fixed. Two inconsistent conceptions appear to pervade the description given of the process. We sometimes hear of a "congruence between the world and the mind" (p. 459), of a "material" which experience gives us to digest (p. 460), and which, because conceptions are a *Denkmittel* enabling us "the better to foresee the course of our experiences," must be presumed to have

an order and existence of its own, which we have to guess at. According to this view, it should be the business of thought to correspond with fact; but Prof. James explicitly rejects the notion of truth as copying or corresponding, and puts forward in places the notion of a purely indeterminate experience, in which our 'hypotheses' had been developed.

This seems to imply a fusion of two psychological conceptions, both of them unfit to be taken as true in attacking the problem of knowledge. The one treats the "fundamental categories" of the mind as spontaneous variations, in the way of thinking, which have been perpetuated in the race because their use gave some advantage to their users, just as strength or speed might have done. This notion is perhaps helped out by the misplaced analogy of trying hypotheses, as it goes on every day among us all. But surely, if the "fundamental categories" are to be explained thus, we have no right to accept as true that conception of a world in which there are individuals who have to master their environment in order to live, which the explanation presupposes. It is itself a product of the use of these categories; and yet it is taken as true anteriorly to them. The "category of trans-perceptual reality is now one of the foundations of our life"; but apparently it might have been otherwise; and then what would have become of this account of the origin of our fundamental categories?

Prof. James will probably answer that the system with which our thoughts has to get into advantageous relations is no system of trans-perceptual reality but, as he calls it on page 470, "the ensemble of perceptions thought of as actual or possible". But the words "thought of" must be deleted, if we are speaking of a mere given material, to whose ways thought has yet to accommodate itself, or on which it has to react favourably; and then it becomes important to know whether a 'possible perception' is not, if anything, trans-perceptual. And it must be allowed, that if we try to regard our experience as a process in which perception and conception modify one another, going on all the time within the mind, if the hypothesis of a 'trans-perceptual' order in which we are placed is to be rejected, we must reject at the same time the conceptions of biological evolution. For different purposes it may be right and proper to suppose that we are in the world we know, and to suppose that the world we know is an ensemble of perceptions and conceptions in us; but in the investigation of an ultimate problem like the nature of truth it cannot be proper to combine those two standpoints.

The other psychological conception which seems implied in some of Prof. James's remarks is that which does attempt to dispense with the notion of a "trans-perceptual reality," accessible to us in perception, to which our interests require that we should adjust our behaviour, and in congruence with which lies the success, and therefore the truth, of the ways of thinking which we strike out. Instead of this, he conceives experience as the gradual elaboration of the chaotic. First comes "a most chaotic pure experience which sets us questions" (p. 461). I doubt if this chaotic state of consciousness ought to be called experience. But my more pressing difficulty is this. This most chaotic pure experience is supposed to be ours *before* we possess "the fundamental categories, long ago wrought into the structure of our consciousness and practically irreversible, which define the general frame within which answers must fall"; for their emergence is the second stage. Their secondary place is of the essence of the Professor's contention, since his whole point is, that the genius of the human race might have lit upon others, and that ours have no other claim to truth than the success which has attended their application to our chaotic pure experience. Now I do not understand how the latter can even put questions to a mind that is devoid of any 'fundamental categories'. Where there are no conditions of intelligibility, nothing presents a problem; every hypothesis which we make in order to render an experience more intelligible to us must fall within the general conditions of the thinkable; a mind which had no fundamental categories, and whose 'experience' was purely chaotic, would not be a mind at all. The stage at which fundamental categories, subsequently to become irreversible, first appeared would be the emergence of mind: and the suggestion that other categories might have emerged is a suggestion that something else than a mind might have emerged. For the nature of mind is expressed in the fundamental modes of its thinking; they define it, and for them to disappear is for mind to disappear. Unless indeed we are to be told there can be species of mind, as of brambles and starfish; but the very expression assumes that the conception of species and genus, which our species of mind employs, has a validity beyond the use which minds of our species make of it, and is applicable to minds universally. It seems as if Prof. James had been betrayed into the attempt to write a natural history of the mind by way of establishing the principles of thinking: yet he surely does not believe that you can swallow your head.

We are told (p. 468) that "those thoughts are true which

guide us to *beneficial interaction* with particulars as they occur". The conception of interaction here is obscure. My body may interact beneficially with a bath or a bun. But what is going to interact with a chaos of perceptions? Prof. James does not however believe that his chaos is a chaos; for its nature determines what conceptions we can beneficially entertain. There is "something in every experience which escapes our arbitrary control" (p. 463): "some questions, if we ever ask them, can only be answered in one way" (p. 464): "the circumpressure of experience itself . . . gets us sick of concrete errors" (p. 465). The first chaotic experience must after all therefore have a fixed and determinate character. I still do not understand what is meant by saying that our thoughts interact with it; it seems to me an unfortunate metaphor from physical science. But anything is better than interaction with a chaos. Only how is the circumpressure of experience, its determinate character which we cannot alter at will, to be reconciled with its chaotic nature? It will not do to say that it has become determinate through the "addition of our thought to it"; for it will not "suffer" every "addition" (p. 463), and so must have had some determinate character from the outset. Are we to distinguish between the facts, and our first impression of them? Is the chaos a mere appearance which, when supplemented by the help of imagination, is found to admit of being interpreted as the appearance of an orderly world? Such a view accords with the notion of a "congruence between the world and the mind"; but elsewhere, as has been said, it is denied that truth resides in correspondence; and Prof. James does seem to think that the original chaos of experience is the original reality, which is altered by the 'reaction' of our thought, as any other reality is altered by what reacts with it. And yet it is suggested that experience is an "other" or a "*that*" which may have a "definite inner structure" not "resembling any of our predicated *whats*". It is a question, we are told (p. 462), which 'Humanism' leaves untouched, and therefore does not decide in the negative; though to entertain the possibility of an affirmative answer seems to throw Prof. James's theory back into a chaos like that of primitive experience.

I have assumed in the last paragraph that congruence between the world and the mind means what others have called correspondence; what Mr. Bradley, for example, calls correspondence when he says, in a passage quoted by Prof. James, that the thought "must correspond to a determinate being that it cannot be said to make". The conception of

truth as correspondence may be open to criticism; though it is hard to see how the "looseness" which the Professor finds in Mr. Bradley's phrase is improved upon by saying that we correspond with anything with which we enter into relations, and that a thought is true when a thing "suffers the addition of it" (p. 463). But it may be (and the passage just referred to suggests it) that Prof. James wishes to substitute for the specific and peculiar and no doubt the difficult notion of agreement between thought and reality another notion of congruence derived from different fields. One bone is congruent with another in a ball and socket joint, when it works easily in it; the shape of a flower is congruent with the insects that fertilise it, when such as to secure cross-fertilisation; in general, we may call the parts of a system congruent, when they are so adapted to each other as to produce a 'beneficial' result. That a pragmatist should attempt to find truth in a congruence of this kind seems sad, but not incredible. There is a curious hypothesis on page 467 which at any rate lends colour to the suspicion. "Let my reader suppose himself to constitute for a time all the reality there is in the universe, and then to receive the announcement that another being is to be created who shall know him truly. How will he represent the knowing in advance? What will he hope it to be? I doubt extremely whether it could even occur to him to fancy it as a mere copying. Of what use to him would an imperfect second edition of himself in the newcomer's interior be? It would seem pure waste of a propitious opportunity. The demand would more probably be for something absolutely new. The reader would conceive the knowing humanistically, 'the new comer,' he would say, '*must take account of my presence by reacting on it such a way that good would accrue to us both.* If copying be requisite to that end, let there be copying; otherwise not.' The essence in any case would not be the copying, but the enrichment of the previous world."

I have ventured to quote this passage at length, because it is perhaps the most surprising in the article. We are not told what good is; and in the absence of that information it is a little hard to be sure what the clause in italics (not mine) means; especially when we consider how few modes of "reaction" are conceivable between a being who "constitutes for a time all the reality there is in the universe" and another supervening. But the hypothesis is too extravagant to be interpreted very rigidly; and we may suppose that if the second comer by his presence were to heighten the pleasure that I had previously taken in my own existence, and

to have the pleasure which he took in his existence heightened in return, the reaction would be such that good accrued to both. Would it therefore be knowledge on his part of me? does the west wind know me, when I am refreshed by it? did the Lady of Tripoli know Rudel because the thought of her inspired him? It may be said that the profit must be mutual: but there is nothing in the passage to show why this should be requisite. If we are really to adopt the truly extraordinary proposal of supposing that another's knowledge of me is what I should like instead of it—for nothing else is implied, when we try to determine what knowledge is, by asking what a man would hope it to be—then it need not involve good to the knower, for I need only hope his knowledge of me to be something from which good would accrue to me. And let us grant that good must accrue to both. Does the bee know the flower which is fertilised while it yields him honey? It may be better for the bee to get honey than knowledge; but is it therefore knowledge to get honey? Let it be said that the flower is unconscious of the benefit that it obtains; and that the good must be a good for the consciousness of both parties to the "reaction". Suppose then that the flower thrilled with pleasure in being fertilised, as the bee perhaps does in sucking honey: would that constitute knowledge of the bee in the flower, and of the flower in the bee? Pleasure may be better than knowledge; but it is as absurd to say that it *is* knowledge as to say with Mill that the simultaneous suggestion of an indefinite number of series of tactual and muscular sensations *is* the apprehension of space. Prof. James has indeed relieved the paradox of his illustration by supposing the reader to *know* himself and the new-comer, apart from any beneficial interaction, although it is still in question what knowledge is. But let us try to apply the results of the investigation on behalf of which his hypothesis is made to the terms of the hypothesis itself. Knowledge of A by B turns out to mean a reaction of B on A from which good accrues to both. What then is the knowledge of B by A, while A is still hoping that B's knowledge of him will be something that will do him good?

The question whether knowledge is good is one thing: the question what it is is another. Pragmatism seems to have passed from saying that there are better relations than knowledge to saying that relations which bring good are knowledge. The change bears testimony to an obstinate conviction that knowledge must be good; and we may grant that a philosophy which fails to show this leaves us with a speculative problem unsolved. Let us return for a moment

to the reader solitary in his existence; if another person supervened, it is hard to see what 'reaction' would bring them greater good than an intercourse of consciousness, knowing and being known. But this mutual knowledge is good, because it is mutual knowledge; if we attempt to explain what is meant in calling it knowledge by saying that it enures to mutual good, our language collapses into insignificance.

Prof. James is indignant that it should be supposed impossible for the pragmatist to recognise a duty to think truly. But in rejoinder he falls back upon feeling. There is a "felt grain inside of our experience" (p. 465), and that seems to him sufficient. He does not see that his opponent wishes to distinguish between a psychological compulsion that drives you to think in a certain way, and a logical recognition that you ought to think in that way, and that others ought to, whether psychologically they are compelled to or not. Or if he sees it, he holds the distinction wrong, and would say that what you are compelled to think, that you ought to think, and therein lies truth for you. Such a doctrine is like the hydra, whose heads spring up again as fast as you destroy them. For when I urge that by truth I mean something which all ought to think, and not what any one is psychologically compelled to think, he will reply that I am psychologically compelled to mean that by truth, and that is all that the truth of my view amounts to. Shall it be retorted that his view is only what *he* finds himself thinking under a psychological compulsion, the view which makes life seem best to him? The retort will not penetrate the armour of a philosopher who acknowledges that that is what he means by truth.

But when it is doubted, 'How can any one be enthusiastic over such a view?' we get a strange answer. We are first bidden to "follow the pragmatic method and ask, What is truth *known as*?"—a question which would seem futile in the mouth of any one who is still trying to find out what truth is. But we are immediately told that it is the opposite of the instable, the practically disappointing, the useless, the lying and unreliable, the unverifiable and unsupported, the inconsistent and contradictory, the artificial and eccentric, the unreal in the sense of being of no practical account (p. 466). Part of this answer is useless (and therefore on pragmatist principles untrue); for to define truth as the opposite of the lying and unreliable is to define in a circle. That it is the opposite of the unverifiable is inconsistent with the admission that the Other may have a definite inner

structure not resembling any of our predicated Whats, but that we cannot tell whether this is the case or not. That it is the opposite of the practically disappointing many know to their cost is not the case. That it is the opposite of the unstable can hardly be reconciled with the view expressed on page 471, that "at each and every concrete moment, truth for each man is what that man 'troweth' with the maximum of satisfaction to himself"; for the "long-run satisfactoriness" which is the criterion of "truth verified by the long-run" cannot give the trower's last throwing any prerogative over throwings that have gone before. That it is the opposite of the inconsistent and contradictory, the artificial and eccentric, I have no wish to dispute. When I am told that it is the opposite of what is of no practical account, I am moved to ask for a definition of the practical.

A true idea is said to have been originally one that prepares us for an actual perception (p. 470); and I suppose it was then practical, because it was to our practical 'interest' to be prepared for the perception. But "it is obvious that, although interests strictly practical have been the original starting point of our search for true phenomenal descriptions, yet an intrinsic interest in the bare describing function has grown up. We wish accounts that shall be true, whether they bring collateral profit or not." By collateral profit must be meant profit beyond their truth; but if truth consists in promoting some other interest, how *can* an account be true that brings no collateral profit? and if it cannot be so, what is the use of wishing it? or it is again suggested that truth may be what we hope or wish it to be, and that since we have a practical interest in supposing that accounts *may* be true which bring no collateral profit, because we "wish accounts that shall be" so, therefore the opinion that they can be so is a true opinion? However this may be, Prof. James recognises the emergence of a "theoretic curiosity," which at its first appearance it is plain he distinguishes from "practical" interests. If this theoretic curiosity is not a practical interest, then so long as the true is what satisfies a practical interest, nothing can be true merely by satisfying a theoretic curiosity. Yet he clearly thinks that it can be. "Trilobites were once alive, or all our thought about the strata is at sea. Radium, discovered only yesterday, must always have existed, or its analogy with other natural elements, which are permanent, fails. In all this, it is but one portion of our beliefs reacting on another so as to yield the most satisfactory total state of mind. That state of mind, we say, sees truth" (p. 471). In other words, a judg-

ment is true, not because the assumption of its truth produces any 'practical' benefit, but because it satisfies "a theoretic need".

It will not do to say that, if it gives satisfaction, it does make a practical difference, and is true because it does us good. For, first, it is admitted that "we wish accounts that shall be true, whether they bring collateral profit or not"; the satisfaction is only a collateral profit; if the judgment were only true *because* it gave satisfaction, it would not be what we wish for, and therefore would not give the satisfaction. Just as the pleasure of a good conscience cannot be obtained by doing right for the sake of the pleasure, so the satisfaction of discovering the truth cannot be obtained by taking anything to be true that gives you satisfaction: unless indeed you say that it must satisfy you intellectually; but that only means that it must appear true. Again, a man who desires to know the truth, and feels satisfaction to-day in the belief that he has found it, may discover to-morrow that he was mistaken; he therefore cannot identify the true with what gives him satisfaction, or accept Prof. James's theory. Yet a theory of truth has little to commend it, if it cannot be accepted by those who "wish accounts that shall be true, whether they bring collateral profit or not". If Prof. James replies that it was never true because it did not bring satisfaction on the morrow, he ought to tell us how we are ever to know that any account is true which brings us satisfaction in the present. If he says that it was true so long as it gave satisfaction, I could only wonder that he had called truth the opposite of the unstable, and go on to ask whom it must satisfy. And once more, there are speculative questions, to which, whether the true answer were found to be negative or affirmative, it would make no 'practical' difference. According to Mr. Peirce (whose opinion Prof. James endorses) such questions must be unmeaning. Yet we may have a theoretic need to find the answer. Can we need an answer to an unmeaning question? And either answer will give equal satisfaction, just because it is the true answer. How then can its truth consist in its power to satisfy? For each answer has an equal power to satisfy, if it be found to be truth; and that means that the satisfaction presupposes the discovery of the truth, and does not constitute it.

The sudden introduction of a reference to our theoretic needs only serves therefore to reveal the bankruptcy of the theory which can neither be made consistent with it nor get on without it. And this appears very clearly in the para-

graphs in which Prof. James recapitulates, on page 474, what he conceives the main points of 'Humanism,' to be. The first is, "An experience, perceptual or conceptual, must conform to reality in order to be true". The next two explain 'reality' and 'conforming'. Substituting for these terms in the first paragraph the definitions given of them in the second and third, we get this dictum: "An experience, perceptual or conceptual, must, in order to be true, take account of the other conceptual or perceptual experiences, with which it may find itself in point of fact mixed up, in such a way as to gain an intellectually and practically satisfactory result". I should like to know what is meant here by 'taking account of'; but Prof. James forestalls any intrusive curiosity on that point by giving it as the next "main point of humanism," that the term cannot be defined—"so many are the ways in which" this requirement "can practically be worked out". I will therefore only ask what is meant by the words "intellectually and practically satisfactory". Are there two different standards of truth? and if so, what is to happen when they conflict? or is it meant that nothing can be true which is not both intellectually and practically satisfactory? If so, how can it be that "interests strictly practical have been the original starting point of our search for true phenomenal descriptions"? While the need for intellectual satisfaction was yet unborn, nothing could be or be conceived to be intellectually satisfactory. Nothing therefore could be or be conceived to be true; and the original starting point of our search for the true was furnished by a state of things in which truth was neither born nor thought of. Thus the assertion that truth must be both intellectually and practically satisfactory contradicts the previous assertion that it is originally the practically satisfactory only. It also leads to the paradox of saying that what is intellectually satisfactory is untrue if it does not help us practically. Yet the doctor, puzzled by his own symptoms, would obtain intellectual satisfaction in the discovery that he was suffering from a swift and fatal disease, although the discovery might render him weak and miserable, and even accelerate the action of the disease. Was his discovery therefore not true? and if Prof. James has the courage to say that, will he have the further courage to say that in such a case therefore the doctor would not die of the disease? Or lastly, will he say that such a discovery is not intellectually *satisfactory*? I should welcome that answer also; for it would show that by 'intellectually satisfactory' he means pleasant; and it would give me some intellectual satisfaction to discover his meaning, though I am afraid he

might say that my discovery was not true unless it also did me some practical good.

Prof. James says that he condemns "all noble, clean-cut, fixed, eternal, rational, temple-like, systems of philosophy". "They seem," he adds, "oddly personal and artificial" (p. 466); though that they are personal might be expected to be taken by a pragmatist as showing, that they respond to the needs of their authors in the way that is constitutive of truth. I hope I shall not seem guilty of disrespect in confessing that, though I recognise the temper of his article to be quite admirable, I cannot agree that a system of philosophy ought not to be rational.

IV.—APPLIED AXIOMS.

BY ALFRED SIDGWICK.

As an excuse for writing on so ancient a subject as the respect which is properly due to 'undeniable truths,' a modern instance will be useful as showing that in spite of the antiquity of the problem its solution is still a little obscure. Such an instance is provided by Dr. McTaggart's reply¹ to Mr. Schiller's attack² on a line of argument which at present enjoys considerable vogue among philosophers.

The 'undeniable truth' there criticised is the Law of Contradiction, and the point of the criticism consists in questioning not the undeniability of the law but the assumption that when used as a ground of argument its undeniability remains intact. Mr. Schiller's position—which in general is that of Pragmatism—involves a thorough-going distrust of the well-known argument that because the best account that can be given in words of processes like Change and Causation contradicts itself, therefore the processes in question are not real. Against this it is maintained that a contradiction is something that may always be due to the unavoidable defects of language, and of thought in so far as its structure is the same as language,—that is to say, in so far as thought depends upon antithesis; and that therefore the actuality of anything must be judged on other grounds than that of our power of explaining its nature in words; and that where we are compelled for all practical purposes to recognise that a thing or a process is actual, no verbal argument to show that it is impossible has any standing-ground.³

¹ *Studies in Hegelian Dialectic*, pp. 110-113.

² Republished in *Humanism*, essay vi. See also *ibid.*, pp. 185-187.

³ To this it may be added that, when once it is admitted that the Law of Contradiction (used as major premiss) cannot be true unless Change is an illusion, it becomes mere question-begging to attempt to prove the illusoriness of Change by assuming the *necessary* truth of the Law of Contradiction in such use. A major premiss can only be called 'unquestionable' by courtesy or exaggeration. To avoid question-begging it must be put forward as open to question.

Dr. McTaggart's contention, on the other hand, is that the reasoning just quoted only holds good if we assume that sensation apart from thought can assure us of reality; and that since nothing can make us aware of reality without thought, any law that can be laid down for thought must be a law that imposes itself on all reality which we can either know or imagine. And, finally, that to predicate reality of a thing whose notion is self-contradictory is to put an end to all possibility of coherent thought anywhere; for if a contradiction is not taken to be a sign of error it will be impossible to make any inferences at all.

What is chiefly interesting in this answer is that it belongs to the time before the distinction between an undeniable law and an undeniable major premiss (or *use of an undeniable law*) had come into notice,—which distinction is involved in Pragmatism. From that former point of view it is natural enough to assume that the only way of objecting to an argument based on the Law of Contradiction is by totally denying the validity of thought and putting mere thoughtless sensation in its place. It is through that assumption that the matter presents itself to Dr. McTaggart as a perfectly simple dilemma. You must either, he thinks, accept or deny the Law of Contradiction; if you accept it, then you are free to use it as a major premiss wherever you please; and if you deny it, then you are talking nonsense. But as soon as we see that it is quite possible to refuse to accept a general rule when used as a major premiss, even though apart from such use we may find no fault with it, this dilemma no longer holds good. There are four alternatives theoretically possible, instead of only two. We may accept or deny the rule regarded as a major premiss, and we may accept or deny it in its other and more ethereal sense. Practically the last of these four alternatives—that of denying the abstract axiom—happens not to commend itself to anybody; we are all content, I believe, to agree that the abstract axiom is undeniable. But what the Pragmatist would maintain is that this admission says nothing at all about the axiom regarded as a major premiss. He contends that when it is so regarded—when it is taken as an 'applicable' law instead of an abstract one—its truth may be denied without talking nonsense; and that the undeniability of what Dr. McTaggart loosely calls "the Law of Contradiction" can only be supported by confusing the applicable law with the abstract one.

Really it would be a very simple matter to upset this position of ours,—if the facts would only allow of it. All that is necessary would be either to explain in what way the

applicable Law of Contradiction can be regarded as universally true, or else to give some reason for condemning as illusory our distinction between the abstract law and the applicable one. Meanwhile I will try to state some of the reasons supporting our side of the question. The fact that here we have a definite instance of a philosopher who rejects our point of view, without appearing to understand what it is, will serve as my excuse for saying some things that might otherwise seem rather too obvious.

First as to the exact point in dispute. What we object to is *not* the admission that a contradiction is something that should if possible be removed, or even something that until removed destroys the meaning of an assertion; but to the assumption that it is an infallible mark of error. A contradiction we regard as in itself a mere fault in expression,—a purely verbal affair; we admit that, like other such faults, it may be due sometimes to carelessness, or again to a piecemeal and therefore erroneous way of regarding a complicated set of facts; but we recognise that it may also be sometimes due to the unavoidable clumsiness of language and of antithetical thought. And, if it makes our position any clearer, we should be quite content to deny the practical importance, rather than the truth, of the rule that a contradiction is a sign of error. To deny the practical importance of a rule is the same as to deny the truth of that rule regarded as applicable—regarded as a major premiss and used in supporting conclusions—though it naturally says nothing about the truth of the rule outside such use. Whether indeed there can be anything worth calling truth in a general rule that admittedly cannot be used as a major premiss is one of the chief points at issue between the pragmatist and other people. And so our opponents do not meet our objection—they only ignore it and seek to beg the question at issue—when they talk about the undeniability of the abstract rule. We may freely admit its undeniability and yet draw a distinction between undeniability and truth, since a meaningless statement is just as undeniable¹ as a true one. We contend that the use of a general rule, and the power of testing its truth, both

¹ When this paper was read to the Oxford Philosophical Society the suggestion was made by one member that only true statements deserve to be called 'undeniable,' though meaningless ones may be admitted to be 'not deniable'. The difference escapes me altogether, and I do not think this use of the words has even an established convention behind it. If, however, this were so, the only effect of accepting the convention would be a verbal one. The pragmatist would still be able to agree with other people in *denying the deniability* of the abstract axiom.

depend on the same condition—that it shall be applicable in particular cases and so run a risk of being proved false.

As to our reason for denying that you can safely proceed to infer real error from verbal contradiction, it consists in the fact that any pair of statements which appear contradictory may represent assertions which are really compatible,—the reason for this being that all statements are elliptical and thus run a risk of being ambiguous. If we are right, therefore, the applicable Law of Contradiction can only be taken as universally true when we forget that any statement, however elaborate, may stand in need of further limiting. We should have to assume—exactly in the manner of the most thoughtless Formal Logic—that the risk of ambiguity in a predicate term is a risk that may be ignored. For in so far as the existence of an ambiguity in the statement 'A is B' can come as a surprise to a given person, that person at that stage of his acquaintance with the term B cannot safely apply the Law of Contradiction to the statement. Before the ambiguity is seen by him he is bound by the Law of Contradiction to suppose that because A is B the statement 'A is not B' must be false; and therefore the more confidently he applies the law, the more he shuts himself out from learning in what respects (or in what contexts) B is an ambiguous term.

It is possible to predict some of the rejoinders that are likely to be made. And what I am anxious to find, but have never yet found, is one that possesses any relevance. Since we all agree that the Law of Contradiction—that is to say the abstract law—is not deniable, and since our objection extends only to the supposed universal truth of the applicable law, many of the usual defences are quite beside the point. At the root of them, generally, I suppose, is the fear that any tampering with the law must result in anarchy or deadlock; and I think we are bound, on our part, to do what we can to allay that fear before we consider the more special points that are sometimes raised.

In an earlier passage of McTaggart's book (p. 9) where he defends Hegel against the charge of denying the Law of Contradiction, he has in view two kinds of such denial, one rather less extreme than the other. The extreme form he refers to is that of asserting that a contradiction, instead of being a mark of error, is a mark of truth. This we really need not here consider, since (whatever may have been at times supposed about Hegel) no one is likely to suspect the Pragmatist of wanting to defend the contrary of the Law of Contradiction; our ambition plainly does not extend to the

finding of any permanently unambiguous axiom. It is only the supposed universality of the law that is attacked; and therefore we need consider only the milder of the two kinds of denial contemplated by McTaggart—that of proposing (as he puts it) ‘to do without the help of the law’. As to this he quite rightly says—what others have often said before him—that then we should be unable to refute any proposition. And we can admit this freely, for the simple reason that we do not propose to do without the help of the law. What we propose is to use it, as so many other general rules are constantly used, with a mental reservation as to its universal truth when applied. It is a mere assumption that this kind of double dealing is impossible,—an assumption which, no doubt, comes very naturally to those who desire to obtain a complete metaphysical system secured against all risk of refutation by an unforeseen course of events. The assumption, however, runs counter not only to the chief part of our daily experience of thinking, and of correcting our thoughts in the act of their growth, but also to the whole method of science. In science, just as in ordinary life, we are in the constant habit of using laws which we know to be not quite beyond improvement. In fact, the better the science is the more it admits this eternal need of correction. Science draws particular conclusions by means of its general rules, but it also recognises that the conclusions—and the rules they depend on—remain open to criticism. And if any defender of the Law of Contradiction will allow us to use that law in the same way we should have no further quarrel with him. But then he must extend this admission of possible error to his own metaphysical conclusions, however clearly he can demonstrate their truth in words.

Another form of the same defence is that to doubt the universality of the Law of Contradiction leaves us without any reason for condemning inconsistency. In answer to this we should distinguish between merely careless (or worse) inconsistency and the kind that is justified by the known defects of language and of antithetical thought. Against careless inconsistency our provisional use of the Law of Contradiction would be just as effective as any less cautious use of the law could be, while the other kind of inconsistency (we should maintain) is something that needs to be encouraged and not forbidden. There is no merit in misunderstanding the course of Nature through an over-regulated effort to understand it. In the same way there is no merit in falling short of the best kind of conduct through a rigid adherence to restrictive principles.

Another defence sometimes met with is that we have no business to blame a rule merely because it is often misapplied. This is, I think, an interesting kind of defence, involving more subtlety than those already noticed. It raises, in a pointed way, a difficulty which is of common enough occurrence in a dispute,—that of deciding whether a rule is itself defective, or only seems so through a wrong interpretation having been put upon it. Every one would admit that, for example, a rule intended to state a *tendency* is not to be blamed if some one applies it without taking the saving clause into account. Nor, again, need an Act of Parliament be condemned because this or that person interprets it wrongly. But the line is exceedingly hard to draw between a rule that is misapplied merely through the fault of the person applying it, and one that even by its own most careful expression contributes to the mistake. That is the charge we bring against the Law of Contradiction. State the law as you will, it remains impossible to apply securely to statements in general. There is no way of making sure *a priori* that in a given context a given predicate is not ambiguous, since we can only see that it is ambiguous after we have attempted to verify it and so have discovered the ambiguity. We can only be wise, that is, after the event that shows our previous lack of wisdom.

This point was briefly noticed above,¹ but perhaps needs a little further expansion. The difficulty of it lies in the fact that whenever an ambiguous predicate interferes with the Law of Contradiction, the state of things before and after the ambiguity comes clearly into view is different. Before the discovery of the two meanings in the predicate B, the admission that A is both B and not B necessarily seems to be a breach of the law; while directly we can admit that A is literally B but virtually not B, or broadly and generally B but for a special purpose not B, all talk of a breach of the Law of Contradiction is at an end. Thus a breach of the Law of Contradiction insensibly passes into a case where there is no such breach (and by the way this change, like any other, is itself an example of the defect of the law). If we prevent ourselves from admitting the possibility that the Law of Contradiction can ever deceive us in application we are thereby at least hindered in discovering a hidden conflict between a literal and a virtual truth. And the virtual truth of a literal untruth is a thing that often reaches our understanding slowly at the best,—just as when a nearer approach corrects our first impression about a distant

¹ P. 45.

object. So that it is not always a simple matter to make sure that an apparent contradiction is not a real one. We often have to wait for that piece of wisdom until time and trouble, and the habit of expecting such mistakes, have brought us nearer to the facts in question. Ignorance of the defects of the applicable Law of Contradiction stands in the way of our forming that habit.

That is how I should answer the objection that since the Law of Contradiction is supposed to apply only to predicates taken in the same sense, a conflict between literal and virtual truth cannot illustrate a breach of the law. In the abstract it cannot, but in any actual case it can. The Law of Contradiction has, no doubt, the most excellent intentions. It *means* to refer only to unambiguous predicates. But then it cannot guarantee its own correct application. If it pretends that no predicate can ever be ambiguous, it lives in a fools' paradise. As things are, an unrecognised conflict between a literal and a virtual truth is only too frequent. The risk of ambiguity pervades all statement of fact, and wherever the ambiguity becomes actual without being seen, the good intentions of the Law of Contradiction are defeated. And our contention is not only that such cases are far more frequent than is generally supposed, but also that they have in two ways a peculiar importance: they arise chiefly at the point at which old knowledge is modified by new, or broad and rather abstract views by special and concrete facts; and the region of their greatest effectiveness is in disputes which are least easily settled, where the balance between the opposed views is most difficult to overcome. Just in that region where landmarks are changing, and where the changing landmarks seriously confuse our view of the truth, obstinacy in appealing to the Law of Contradiction as a ground of argument tends to bar out the chance of progress and of harmonising the dispute.

The mere number and frequency of these cases is considerable, since the change of a possible into an actual ambiguity occurs wherever any important detail in a fact is overlooked or ignored in its description or conception. A given fact is described as B when (if a certain detail had been taken into account) it would have been seen to be virtually a case of non-B. The description B is thus correct in the absence of more detailed knowledge, but incorrect in its presence. This piece of progress in knowledge therefore makes a correct description incorrect; and reversely, the habit of supposing that a correct description cannot be incorrect stands in the way of the particular piece of progress.

Perhaps the clearest examples are those where the detail overlooked is one that is growing in importance, and where there is a sufficient interval during which its growth is not much noticed and its existence is rightly kept out of sight. But the growth must not be too slow, else language accommodates itself to the new state of things and no mistakes are made. If an Alpine lake gets silted up with glacier mud in 100,000 years, and becomes first a swamp and then a fertile valley, no one is likely to misdescribe it much during the process; and even when a village or a suburb—like Kensington or Chelsea—is ceasing to be a village or a suburb, and is becoming virtually a part of the town, the people whom the old description would mislead may not be very numerous. Still, that is not always so. Seeley, in the *Expansion of England*, notices an interesting case where an old conception of fact has actually survived its justification for a considerable time, so as to produce an important confusion of thought. In the seventeenth and eighteenth centuries the distance of our colonies from the mother country was a determining factor in the notions we had about them. The sea *divided* us from them—before cables and steamers came into use—and therefore it was natural that we should not think of colonies as parts of our country (like Kent or Cornwall) but rather as appendages to it—‘possessions’. The decay of this idea, Seeley points out (writing in 1883), has not kept pace with the rapid decrease in the difficulties of communication. Hence the virtual truth of the matter was obscured—and perhaps it still is so to some extent—by the old forms of expression and the old habits of thought.

But there is no reason to restrict our examples to this kind of situation, where the not-B element in a case of so-called B is properly negligible at one stage and gradually grows in importance. A conflict between literal and virtual truth may be obscure for other reasons beside the fact of slow change or development. It seems better to connect it with the whole problem of ambiguity—that is to say, with the difficulty of applying general names so as to give due weight also to individual peculiarities which are important. Since there is no way of asserting or conceiving any fact except in general names that describe it, and since every fact nevertheless has its own individual peculiarities, all statement or conception of fact is elliptical and therefore liable to suffer through making important omissions. And in so far as the mistake is a plausible one, the correction of it involves (till it is accepted) an apparent breach of the Law of Contradiction, and therefore is hindered by our rigid adherence to that law.

If we take any examples of this extremely common situation—where an important detail is hidden by a general name—we shall find, I think, that the difficulty of viewing them as cases where the Law of Contradiction has to be disregarded arises partly from the change in our point of view *after* the literal and the virtual truth have been disentangled, and partly from the fact that in ordinary life, and even in science, no express reference is usually made to the Law of Contradiction. Except in philosophical writing of a particular kind the axiom is hardly ever expressly mentioned. The man who discovers the importance of a detail which might have been discovered sooner finds it more natural to mention the detail itself; and as soon as he proves its existence, and its importance, the virtual truth at once conquers all verbal obstacles. There is rather a good instance which I have had occasion to quote in another connexion,¹ where some experimental cases reasonably supposed to be cases of splenic fever infection were afterwards unexpectedly found to have been complicated with another kind of infection so rapid in its effects that the splenic fever germs had not time to get to work, and so appeared to be inoperative. The overlooked difference turned upon the fact that the blood used for the experiments was not quite fresh, having been taken twenty-four hours after the death of the animal. These *were* cases of splenic fever infection, and yet in view of the particular experiments they were not so. Literally they were B, and virtually they were not B. Here the axiom that if a disease is a particular kind of fever it is *not* another (different) kind may have had its effect in delaying the discovery, but was naturally not referred to, and therefore not disputed. As soon as the existence and importance of the detail became clear, it was seen that actual splenic fever infection ceases to be virtual splenic fever infection after the lapse of twenty-four hours.

The overlooking of important details in describing or conceiving a fact is really too common an experience to need further illustration. But if we want examples that are concise, and sharply pointed, and easy to follow, we can get them best from detective stories. Such stories, with their inevitable conflict between a theory formed by the regular police and a theory formed by a gifted amateur with an eye for peculiar details, always illustrate the value of doubting whether a thing that may be correctly described as B may not also be called an unusual kind of non-B; and the conflict is typical of all careful and subtle inquiry into facts and their best description.

¹ *Process of Argument*, p. 95.

Take, for example, Poe's tale of the murders in the Rue Morgue, where the investigation, at one stage, turns upon the point about the fastening of the back windows. The police examined them and found that they were firmly nailed down from inside. There, full in view, were the nails that were driven through the frames of the windows. With some excuse the police concluded that the murderer did not escape that way. Then the amateur detective comes on the scene, and examines the facts more carefully. He finds that while one window (which the police had tried to open) was securely nailed down, the nail in the other had been broken off at some time, leaving the head in the frame. The police took their observed fact as a 'nailed-up window'. For some purposes¹—or at least, apart from the purpose of opening the window—that was a correct description; the window had actually been nailed up, and the nail had never been withdrawn. What made the description importantly incorrect was an individual peculiarity belonging to this case as contrasted with the class of 'nailed-up windows' generally. The police took the responsibility of assuming that none of the special details of the case were of a kind to make the general description virtually incorrect. For them the loose and general predicate B stood in the way of the virtually truer predicate non-B.

Artificially invented points of this kind may at any rate serve to remind us of many similar incidents in our own less dramatic experience. They help us to remember many less striking and less definitely pointed cases where, through the overlooking of some detail either in the fact itself or in what are loosely called its surroundings, the fact (or state of things) has a good apparent right to the name B, and also a better though less apparent right to the name non-B—cases where the fact is B on the surface, or regarded in a broad and general way, and not B when regarded more closely or with a special purpose in view. In all such cases, unless the Law of Contradiction happens to be expressly mentioned its defects do not come naturally into sight. And when the two kinds of meaning have been clearly distinguished the difficulty exists no longer and there is nothing to show that the law has played us false in its application. Nevertheless the Law of Contradiction, applied in the only way it can be applied *before* the new knowledge comes to hand, is a misleading influence. It fights on the sight of prejudice, and delays the advent of the clearer and fuller view of the facts.

¹ *E.g.*, for the purpose of noticing the damage done by a tenant.

Common sense, no doubt, often makes light of verbal contradiction and so rushes in where philosophers fear to tread. Still, it does seem more businesslike (and therefore also more truly philosophical) not to entrust the over-riding of this kind of wordy prejudice to our rather uncertain impulses of common sense, but to admit in our Logic and Philosophy the need of keeping a clear course open for doing so. At present, however, the risk of misapplying the Law of Contradiction escapes the notice of some of our most ambitious philosophers. In this respect they seem hardly to have advanced beyond the simple-minded assumptions of the merest Formal Logic. With perfect confidence they assume that a verbal contradiction is an unmistakable sign of real error, and that no further justification is needed for condemning as illusory all the notions that have most abundantly proved their practical value. Conceivably some such criticism of fundamental notions might be undertaken for the sake of improving their usefulness in managing our lives. Take Causation, for example. Even the verbal puzzle about A changing into B would have importance if the moral to be drawn from it were that our notion of the essential elements in a sequence is liable to be vitiated by the drawing of a hard line between antecedent and consequent, and between the whole event and its surroundings. If what we call A is really a little more B than we think it, we naturally make mistakes in foreseeing the line of its development; and merely to be reminded of this possibility—especially in connexion with actual examples—would have, no doubt, some practical value. But unfortunately that is the last thing that this kind of philosopher desires. Everything practical is, for him, a "mere makeshift," and he won't be happy till he gets outside the domain of practice altogether; in other words, out of the region in which his symbols have to be verified in order to mean anything. His whole speculation, in consequence, takes on the character of an ingenious but trivial game, played under rules laid down by verbal axioms which are only safe from criticism when they are subjected to no tests and interpreted as having no bearing on any mundane facts.

The particular example I started with has perhaps drawn us into a good deal of disputable matter on its own account. But exactly the same disputable matter belongs also to the wider question how far and in what manner the defect here imputed to the Law of Contradiction should be recognised in other general rules as well. I have only taken the Law

of Contradiction as a notable instance of a whole class of general rules—those where it is possible to delude ourselves by the undeniability of the rule regarded otherwise than as a major premiss. Whenever a rule can thus claim axiomatic value the defect in question attaches to it. Our contention is that no clear distinction can be made between the defects that really belong to a rule and those that falsely appear to belong to it because it is misapplied. Some way this distinction will carry us, but not quite far enough. There seems to be no clearly distinctive feature of careless or faulty interpretation as contrasted with interpretation which is unfortunate through no one's fault. For since all general rules—even axioms—are liable to unforeseen ambiguity therefore any particular misinterpretation of a rule may be one of those accidents that will happen even in the best regulated kinds of thought. In such cases we do not seem to gain anything by maintaining that the rule *in itself* is not defective, for nobody can tell (except negatively) what this 'rule in itself' may be—the rule regarded apart from all application. Such a defence is really no defence at all. It is either an empty, resultless courtesy paid to the rule, or else its result must be to make us treat the risk of misinterpretation lightly.

The way in which this kind of defence of a rule misleads us is by restricting our notion of what makes a rule defective, so as to leave out of account the subtlest and therefore most troublesome source of error in the use of rules. Assuming that it is important to know exactly how far a given rule may be trusted—and that assumption is, I suppose, involved in all attempts to make our inferences correct—it seems to follow that we ought to get as far as possible from an optimistic or happy-go-lucky view of the risks; that we ought not to be content with calling a rule defective only in so far as we can already see ways of improving its statement, but rather to recognise that the worst defects are those that no improvement of statement can ever remedy,—those that are inherent in the applicable rule however we try to guard against them. Mistakes of application are then chargeable to the rule itself; or at any rate if the actual mistakes may be charged against the individuals who make them, the general risk is something that affects not this or that particular application but all applications alike. The only general account of misapplications is that they are *facilitated* by a rigid belief in the universal truth of the rule, while this in its turn is facilitated by confusing the applicable with the abstract rule. Be an axiom never so axiomatic it has got to contemplate being applied,

or else gives up its claims to a meaning. And to contemplate being applied involves either the contemplation or else the ignoring of the risks of wrong application.

In this connexion it may be asked what is our attitude towards mathematical axioms. They are not, I should say, an exception to the rule that all rules exist only to be used as major premisses and were originally discovered with that purpose more or less dimly in view. But our opponents may grant this and still insist on asking whether, in our opinion, mathematical axioms are, like other general rules, open to question when applied. Our opponents may contend that it would be folly or perversity to call (*e.g.*) the multiplication table questionable. When we make a mistake in addition—even the kind of mistake that is likely in counting infusoria while they are in process of division—we blame our *minor* premiss as a matter of course. Though the apparently one and the apparently one may make some other number than two, we at once in such cases admit our observation to have been at fault. Here, then, the opponents may say, is a considerable class of abstract truths used as major premisses and yet quite beyond our power to question. If so, what becomes of our argument against using the abstract axioms of Logic with the same entire conviction of their truth?

I confess to having only the vaguest ideas as to the present or future possibility of questioning the truth of the mathematical axioms otherwise than idly. It is for those who are able to find, or to foresee, the faults of them to show what value such researches may have. But even a person thus ignorant of mathematics may, without venturing out of his depth, deal with the argument that if mathematical axioms are admitted to be abstract and also true and useful as major premisses, the ground of our objection against the abstract logical axioms disappears. This argument is irrelevant in two respects. In the first place the defect of the abstract logical axioms, as explained above, does not consist in their abstractness *per se*, but in their abstractness relatively to their only possible applications; the logical axioms (when universally true) refer to *assertions* while their only application is to *sentences*. But when we apply (*e.g.*) the multiplication table, though the laws of number are always admitted to be abstract the numbers counted are also always admitted to be only one aspect of the particular facts in which the numbers are found. Behind an inference resting on an appeal to arithmetical principles there is always implied the saving clause 'so far as these are numbers'—which includes

both the proviso 'if I have counted as I intended' (*i.e.* correctly) and the proviso 'if the laws of number are applicable to the subject'. And where do we find any similar safeguards in the application of logical axioms? Only where the conclusion is held tentatively or at least with a full consciousness of the risk of identifying sentence with assertion; only, for example, where the confident use of the Law of Contradiction to rule out inquiry has been most carefully avoided.

In the second place, if it be the fact—as we need not mind assuming provisionally—that no present or future application of a particular mathematical axiom will ever force us to reconsider and revise it, all we can say is, So much the better for that remarkably wary and farsighted axiom. Still the prophecy is gratuitous, and may be wrong. There is no great harm in a generous, or even a sanguine, recognition of an axiom as true, so long as we reserve to ourselves the power of testing its truth in particular applications. The harm only begins when, in order to apply the axiom for the sake of drawing a conclusion from it, we slur over the question whether as so applied it is true. And our argument about the logical axioms is not affected by the superiority of the mathematical ones—if they are superior¹—in resisting this misuse. We have seen, anyhow, that the misuse does occur in logic, and also that the logical axioms (when applied in the only possible way) are downright misleading. Their defects do not require to be spoken of as vague future possibilities, but are well within the range of any one's understanding at the present day. The only excuse I can suggest for the common habit of ignoring them lies in the real difficulty of recognising consistently the distinction between a rule considered as a major premiss and a rule merely 'up in the air'. One reason why it is so often overlooked may perhaps be found in the fact that the same verbal statement of a rule is naturally made to serve both purposes, so that it is difficult to see that the two different interpretations of the same form of words amount in effect to two different rules,—or to a rule on the one hand and the ghost of a rule on the other. And the difficulty is increased by the fact that there is no pair of contrasted names in general use by which to

¹ It may, for instance, be held that where a mathematical law has been applied to a subject which does not admit of mathematical treatment, there we have an abstract law applied to the given whole instead of to an abstracted part only of the particular case. I gather that Mr. Schiller would in some such way regard mathematical and logical axioms as alike in providing the same temptation to misuse.

mark the difference and keep it in view. The distinction is not simply (*e.g.*) that between 'abstract' rules and others. The least inappropriate¹ pair of names seems to be 'applicable' and 'inapplicable'. By an applicable rule we should thus mean any rule that is not afraid to run the risk of application in minor premisses; or any rule which is not interpreted so as to beg the question it professes to answer about what may be inferred (supposing it true) in particular cases of a specified kind. When it says that all A are B, it refuses to shelter behind the explanation that any case of apparent A which is *not* B thereby stands condemned as not properly a case of A at all. For example, the Law of Contradiction taken in the abstract does no more than define the word 'contradiction,' by saying that *if* two apparently contradictory statements do not cancel each other they are not really 'contradictory' statements; while on the other hand the applicable Law of Contradiction ventures beyond this verbal explanation, and therefore can claim only a *prima facie* truth which may in any case mislead those who trust it simply.

If our party are right in this matter, and if no relevant objection can be brought against our view, what we must expect, of course, is to be told that it is so obviously true that it need not have been expressly stated. That is the usual fate, in controversy, of philosophical views when it becomes clear, in the end, that they have to be admitted. It was for this reason that I began by quoting an instance where our view (in spite of its being so obvious) was actually not understood. That is however only one instance out of many. Nearly everybody, I believe, except the Pragmatists, is still disposed to put unquestioning faith in general rules which are only not misleading when they lead nowhere, which are only undeniable when they beg the question they profess to answer when applied. The common platitudes or truisms of every-day thought get their whole inspiration from this practice. Formal Logic is entirely built upon it. And the more ambitious any system of Metaphysics is, the more it seems driven in the same direction. We may admit quite easily that it is only in the interests of practice that there is any fault to be found with attempts to soar above all practical considerations. But then the whole dispute seems to lie be-

¹ Inappropriate because I admit that an inapplicable rule is too much honoured by being called a rule at all. But this objection cannot pretend to be more than literary.

tween those who think they can understand what is meant by a claim to Truth which is above all considerations of practice and exempt from all scrutiny, and those who assert that no such attitude is intelligible. To the latter it seems that to make this claim for any theory is a covert way of confessing its instinctive dread of facing a theory's only test.

V.—THE MEANING OF THE TIME-DIRECTION.

BY R. A. P. ROGERS.

[ABSTRACT.]

Kant endeavours to give an objective meaning to the Time-direction by regarding it as a concrete expression of the Category of Cause and Effect, which is the only Category which expresses an irreversible relation between objects. A determines B but B does not determine A. Now this Category as *intellectual* can only mean that if the cause is given it is possible for intellect to *deduce* the effect; on the other hand, if the effect is given it is not possible for intellect to deduce the cause. As applied to Time, this means that given the Past the Present and Future can be foretold, but given the Present or Future the Past cannot be uniquely deduced, and may be one of several. This difference of relation, for Kant, gives meaning to the Time-direction; if this were not true, there would be a Time-order but no Time-direction. The principle is shown, however, to be false, for the Time Series is unique and all its parts are necessarily connected; hence omniscient intellect could deduce the only possible Past from the Present, with the same certainty as it can deduce the only possible Future from the Present. Therefore the *intellectual* relation between Past and Present is *reversible*. This is illustrated by showing that the fundamental laws of rigid dynamics, $s = \frac{1}{2}ft^2$, etc., are reversed by merely changing the sign of t .

We must therefore seek for some other objective determinant of the Time-direction.

I notice that the Time-direction is *psychical*, *i.e.*, when the conscious subject is abstracted, Nature appears as an endless series of phases continuously connected extending in either direction (Past or Future) indifferently. The laws of science illustrate this.

Hence it follows that consciousness must make the Time-direction.

I conclude that the Time-direction must have a psychical basis, and therefore a *psychological* explanation of it is valid, provided this can be made objective.

The explanation must therefore begin from subjective experience of the difference between Past and Future. Consciousness is always in the present, which is, so to speak, an ever-changing unit containing elements which give a meaning to the distinction between Past and Future. These elements are memory and expectation respectively in a general sense. But the active elements in both accentuate the difference most strongly. Thus desire intensifies the conception of the Future. The Future is that which can be an object of desire and is the direction in which Will moves; the Past has only a theoretical interest.

This explanation, however, is purely subjective and individual. How is there one Time, and one Time-direction for all conscious beings?

Since the Time-direction has a psychical meaning only—and in the

individual it is given by Will—the objectivity of the Time-direction necessarily implies objective Will.

The Future, in fact, *is* the direction in which Objective Will necessarily moves, and through this necessary motion Time ceases to be a mere continuum. The Motive which actuates objective Will is the continuous and progressive development of some unique psychic Quality. This Quality, by its very definition, must be an 'absolute and common good' since objectivity of Will implies universality.

As Nature inevitably strives after an absolute and common good for all conscious beings, we have a reconciliation between Rational Ethics and Natural Law.

Finally the assumption of a Supreme Spirit immanent in Nature, delivers us from the solipsism which arises from the conception that any individual human will can guide the processes of Nature. The human Will becomes rationally objective through submission to the Divine.

FROM the point of view of Religion, Time is the form in which the Divine Purpose is manifested to finite minds. Ethics regards the Future as the possibility of a better state of humanity, to be attained by free conscious action. Again, if Kant is right, in ordinary experience we are bound to regard Time as the form in which the intellectual Category of irreversible relation becomes concrete. Each of these three treatments of the form of Time is an attempt to give an objective spiritual meaning to the direction—as distinct from the continuity and order—of the Time series. It is of great importance to determine if a connecting link can be found between the solutions offered in the three spheres of Religion, Ethics and theoretical philosophy. With this end in view, I propose, in the first place, to examine Kant's proof of the Second Analogy, 'All changes take place according to the law of connexion of Cause and Effect'.¹

The proof of the Analogies depends on the famous Anti-Human principle that the objectivity of experience, as distinct from the subjectivity of mere impressions, means the regulation of quantified and qualified perceptions by universal and necessary laws. When we say that an event *does* happen, or that an object *is* in a certain place, we mean that a certain perception *must* rise in the mind of any observer (in a given position and with given sense-faculties) in virtue of its necessary connexion with other perceptions, and that the mind *conceives*, though it does not *feel*, this necessity. The experience of the individual is, for Hume, a mere cinematographic display of impressions; it is this for Kant also, but the objectivity arises, not from the panoramic

¹ By Time-direction, I mean the relation of Past and Present. It must be carefully distinguished from the Time-order, which implies that Time is a *Continuum* of objects, like a straight line, in which the direction is indifferent.

phantasms possessing a concrete internal meaning—as ordinary people foolishly think—but from the fact that the spectator, placed in a given position, knows that the parts of any one picture *must* be arranged as they *seem* to be and that the pictures *must* follow one after another in the order in which they *seem* to follow. An appearance becomes objective as soon as it is recognised as a necessary part of a scheme of appearances. Knowledge—as distinct from subjective feeling—implies that we recognise that the panorama of qualified and quantified impressions could not be unrolled in the reverse order, and the objects of the picture could not be arranged in any other relative position.

Each of the necessary *à priori* intellectual elements of experience are exhibited by Kant in three phases, passing from the abstract to the concrete. First, as an abstract Judgment of formal logic. Secondly, as a transcendental concept or Category, referring to objects in general. Thirdly, in their application to our concrete experience, that is, to our perceptions. Here they become necessary laws or Principles of Space and Time experience. Each phase is a more concrete expression of the preceding one, and each of the last two phases may be exhibited in the first phase as a judgment. The differentia of a Principle or of the corresponding Category appears in the corresponding Judgment.

In the Principle which I am now discussing—that of cause and effect—the logical phase is the Hypothetical Judgment; If a proposition A is true, the proposition B is true. This judgment is *irreversible*, that is, from its truth we cannot infer the truth of the converse; If B is true, then A is true. In the transcendental sphere the Category expressed as a judgment is: If A is objective then B is objective. This judgment, in like manner, cannot be converted; we cannot infer from its truth that the objectivity of B involves the objectivity of A. Here, then, we have the concept of an irreversible relation between objects, which Kant terms the relation of cause and effect. Passing to the third stage, that of our experience in Time, the Principle may also be expressed as a Judgment, 'If A happens, then B will happen, or is happening'. This judgment cannot be converted; from its truth we cannot infer the truth of the judgment; 'If B happens then A has happened': for otherwise the connexion with the Hypothetical judgment would fail. The Principle then expresses the necessary irreversibility between *events*. This irreversibility is the concept which gives an objective meaning to the Time-direction of perceptions.

If the judgment, 'If A happens, then B happens,' could be

reversed, it would be meaningless to say that A exists before B in time. In other words (Kant holds) the irreversibility of the Time-direction depends for its objective meaning on the irreversibility of the intellectual relation between cause and effect. If a definite event (*c*) is given, then another event (*e*) is necessarily determined, and must follow. But if *e* alone were given we could not argue that *c* is necessarily determined and has already taken place. Kant seems to have overlooked that this would be the true intellectual reversal of the relation. A given cause can have only one effect or series of effects, but a given effect may be produced by an indefinite number of causes. Or, more generally, many different series of events may have preceded a given event; but only one series of events can follow a given event. The Future is determinate, the Past indeterminate.

This relation between Present and Future as conceived by Kant may be illustrated mathematically. Let *x* be a present event, *y* a future event, the effect of *x*. The relation of cause and effect may be expressed by a functional equation $y = f(x)$. When *x* is given *y* is uniquely determined; in other words, $f(x)$ is a single-valued function of *x*. On the other hand, when *y* is given *x* is indeterminate, having more than one possible value; that is, *x* is a many-valued function of *y*. The equation $y = \sin x$ would be of this type; given *x*, *y* is determined; given *y*, *x* has an infinity of values, $n\pi + (-1)^n x$, where *x* is one of these values. If $f(x)$ were a polynomial, such as a cubic, the same irreversibility would follow. Kant's doctrine expressed in mathematical language implies that the cause is a multiple-valued function of the effect, but the effect is a single-valued function of the cause.

The whole of Kant's argument for the objectivity of the Time-direction (as distinct from the objectivity of the Time-order, and of the isolated events in Time) depends, therefore, on the truth of this compound proposition, 'A given cause produces a determined effect, but a given effect may be produced by different causes'. If this proposition is false, that is, if the present and future are, intellectually, reciprocally determinate, then the Time-order, for Kantians, is not objectively irreversible. Events in Time, as well as objects in space, will stand in a relation of Community (action and reaction).

The principle that when a phenomenon is given, the effect is uniquely determined may be termed the Singularity of Effects (as contrasted with the Plurality of Effects, when a phenomenon is given, the effect is indeterminate). The corresponding doctrines when cause and effect are interchanged may be termed the Singularity of Causes, and the Plurality

of Causes, the latter term being borrowed from Mill. It is clear from the above that (for Kant) the objective irreversibility of the Time-order depends on the truth of the two principles—the Singularity of Effects and the Plurality of Causes. But it will be shown in the sequel that if the terms Cause and Effect are used in the ordinary conventional and abstract sense, the Plurality of Causes and the Plurality of Effects stand or fall together, and the Singularity of Effects and the Singularity of Causes are likewise inseparable. On the other hand, if the terms Cause and Effect are used in a fully comprehensive sense, the Singularity of Causes and the Singularity of Effects are both self-evident; and the Plurality of Causes and the Plurality of Effects are axiomatic absurdities. It will be therefore in either case necessary, on principles suggested by Kant, to seek for some new universal concept, law or notion, to objectively determine the Time-direction.

Before further discussion it will be well to fix a definite meaning to the notions of cause and effect, as exhibited *in concreto*. In ordinary language a cause is an isolated phenomenon, necessarily succeeded by another isolated phenomenon, its effect. For example, a diminution of pressure in the atmosphere causes a fall in the barometer; a sickness is the cause of death, and so on. Kant and Hume seem to have used these terms in this narrow sense. Mill defined cause as a sum of conditions positive and negative, either simultaneous with or preceding the effect, which necessarily appears when these conditions are given. Though in this way he extended the use of the term "cause," he continued to use "effect" in the same narrow sense of an isolated phenomenon. This abstract use of terms is inevitable in practical science, which aims at producing definite effects; but Philosophy deals with the concrete whole of phenomena, not with abstract, isolated phenomena, and its terms should be as comprehensive as possible. By extending the notion of a sum of conditions, we arrive at the following definition of the notion of a concrete cause. A Cause *in concreto* is the entire infinite complex of phenomena existing at any given instant, when this complex is viewed in relation to the entire infinite complex of co-existing phenomena which follow it in Time; the latter complex in relation to the former is Effect; and again becomes Cause of the succeeding infinite complex. An infinite complex of co-existing phenomena may be termed a *complex moment of Nature*, and I shall hereafter refer to it as a Moment. Nature passes in turn through its different Moments, each of which is a complex totality, in virtue

of the law of Community which connects all its co-existing phenomena. Any integrated sum of Moments is likewise the cause of the succeeding integrated sum of Moments. *The relation of cause and effect can be applied only in a loose and secondary sense to isolated phenomena.* This limited use is, as I have said, inevitable in science and ordinary life, but it really points out those elements in true cause and effect which are most conspicuous or most important for the observer, and capable of being reproduced in connexion. We say that a person's illness is the cause of his death. In the wider sense of the term, the cause is the integrated sum of Moments which include his illness; the effect is the Moment which includes his death. General laws of science are abstractions, which hold good, and are true, so long as their limitations are not overpassed. Nature herself is not an abstraction, but a concrete reality acting inevitably according to her own laws; but for Nature these laws are not formal or abstract. The activity of Nature, as Spinoza would say, is free, and not a submission to external generalities or abstractions. We may concede, however, that a Moment of Nature is, figuratively speaking, *condensed* in any one of its parts, and this part in its representative capacity may be regarded as the cause in relation to the following contiguous phenomena, which is similarly representative of its Moment.

The sense which I have attached to cause and effect relation, as exhibited *in concreto*, is, I hold, necessary in order to make Kant's argument definite; for there is not a different time-series for each isolated train of phenomena. If the cause and effect relation determines the one time-series, there must be only one cause and one effect in each moment of Time. Nevertheless, even if cause and effect are predicated of isolated phenomena, the Singularity of Causes and the Singularity of Effects stand or fall together according to the point of view we take. Every series of phenomena may be regarded as different phases of a permanent. If attention is fixed on the phases, then each phase may be preceded or followed by a variety of determinate phases; and in this sense the Plurality of Causes and Effects hold good. But if attention is fixed on the permanent, then the relation between cause and effect is merely one of Identity, and the Singularities of Causes and Effects are self-evident. A given quantity of heat may pass *in any order*, according to circumstances, through different phases, and finally pass into mechanical energy, which in turn may produce the same quantity of heat. These transformations are held as a *proof*

of the existence of a permanent sum of energy. The transformations are reversible and indeterminate. This indeterminateness in the order of the phases arises from abstracting from the actual environment. The indeterminateness is removed when we regard nature as a concrete whole; then each complex Moment is the unique and necessary cause of the succeeding Moment which is its unique and necessary effect. The complete Present could have been deduced from the Past, only if all the past conditions are given; and reciprocally if all the present conditions are given the complete Past can be deduced from the Present. In other words, the Past is as intellectually dependent on the Present as the Present on the Past.

The objection which a whole-hearted Kantian will urge against this conclusion is that the mistake arises from neglecting the schema of Time. Kant himself saw the difficulty of applying intellectual concepts to the pure form of intuition, and to overcome this difficulty he invented—or pointed out—the existence of the schema of Time, that is, the form of Time determined *à priori* by the Category, before empirical objects exist therein. The forms of Time exhibit it as something more than a one-dimensional continuum; the direction from Past to Present is also involved. 'The schema of cause is the real which when posited is always followed by something else. It consists, therefore, in the succession of the manifold, in so far as that succession is subject to a rule.'

But this description of the schema itself justifies my criticism. There is a definite rule of succession. You have the direction of Time given in the pure form of intuition; and the succession of definite units according to a rule is, we will suppose, given by intellectual law. But this law is not one of irreversible dependence. It is rather a law of definite order in which each unit depends on the law of order, but *not on the preceding unit any more than on the succeeding.*

The conclusion at which we have arrived is capable of an *ad absurdum* proof. If the Past is not intellectually dependent on, and therefore deducible from, the Present, the Present may have had several different Pasts. Any one of these different Pasts is necessarily connected with the actual Present; therefore, for Kant, each of these Pasts actually happened! For a Transcendental Idealist, the actual Past is that series of events which would necessarily produce present perceptions, possible or actual. This follows from the Second Postulate of Empirical Thought. "Was mit den materialen Bedingungen der Erfahrung (der Empfindung) zusammen-

hängt, ist wirklich." The history of Nature and Man will be indeterminate, being, in fact, multiple. It will be meaningless to inquire what was the actual course of History, for there were many courses. The problem will be what different series of events could have produced the Present. It may be true that Napoleon really existed; it may *simultaneously* be true that he was a myth, and that all the writings and traditions relating to him were forgeries or lies. Memory also will be an extraordinary phenomenon; of these different actual Pasts it selects only one; but it should, if trustworthy, report all the different actual Pasts which, experienced by the individual, could have produced his present perceptions!

The above is a *reductio ad absurdum* of the doctrine of the intellectual irreversibility of the Time-series. The direct principle involved is that the actual course of History is unique, and the Present is representative of it; the Future is also unique and necessarily follows from the given Present. Omniscience could argue back from the Present to the only possible Past, *i.e.*, to the actual Past; or from the Present to the only possible Future, *i.e.*, to the actual Future. Dynamics affords a good illustration of this. In that science—as in all abstract sciences—Time is regarded as a one-dimensional continuum (*t*) in which the *order* of events is necessary, but the *direction* is conventional. It is true that no dynamical scheme has been discovered which will satisfy all the formal laws of Nature; yet the reversibility of dynamical laws are symbolic of the intellectual reversibility of all the laws of Nature. Newton's laws are expressed in *prophetic* form, but they are really just as much *historical*. The first law, for example, may be stated, 'Every body *has* been in a state of rest or uniform motion in a straight line since the last force acted on it'. If the *motion* of every particle of matter were instantaneously reversed, it is quite possible that, every law remaining unchanged, past phenomena would be produced in inverse order. The planets, for example, would move round the sun in the opposite direction in exactly the same orbits, and with the same periods, if their motions were instantaneously reversed. A like theorem is true for every conservative system of forces; if the velocities at every point are reversed, the past states are reproduced in the same order. Whether this is true in general does not alter the fact that the reversed order is always uniquely deducible by changing the sign of *t* in the prophetic equation. The simplest cases are the fundamental equations. The equation $s = vt + \frac{1}{2}ft^2$ is prophetic or historical according to the sign

of *t*. It may be objected that this equation does not apply backwards *ad inf.*, but its backward application, like its forward application, is dependent on the positions of other particles. The present positions, masses and velocities of all the particles are supposed to be given in both cases.

We conclude that the relation between the Complex Moments in the Time-series is, *intellectually*, a relation of reciprocity—action and re-action—just as much as the relation between different objects in space. Keeping to Kant's intellectual view of Causality (the pure Category), this means that the Future is just as much the cause of the Present as the Present is of the Future, or to put the same truth in different language, the Final Cause (the Future viewed as determining the Present) just as much as the Efficient Cause (the Present viewed as determining the Future) is a necessary postulate of Science and of History.

This conclusion will no doubt cause some surprise. To those who, in opposition to Kant, hold that events in Time have a self-dependent, isolated existence, the proof will appear as a mere *argumentum ad hominem* against Kant, and therefore of little value. It must be fairly obvious, however, that Time is the form in which the eternal concrete unity of Nature breaks into a plurality of phases. Each phase has thus an eternal or ontological as well as a merely transitory or phenomenal meaning. The ontological meaning—though it is really concrete—we make definite to ourselves by conceptions of universal laws, which as such are supra-temporal. Each Moment acts ontologically *sub specie aeternitatis*. We cannot say that the Future does *not yet* act ontologically, for the ontological action must be conceived as outside the Time-series. A Moment of Nature viewed phenomenally, that is, as a mere appearance, is not determinative of anything either past or future. The *action* of Nature is, so to speak, behind the scenes, and revealed to us by intellectual conceptions of necessary connexion. Ontologically, then, the Future exists even in the Present, through the fact that it necessarily determines the Present; and the Past is actual in the Present because it necessarily determines the Present. The Future is dependent on that which is eternal in the Present, and the Present is likewise dependent on that which is eternal in the Future. The same eternal essence manifests itself in both, in different phases. The point at issue between the Final Cause and the Efficient is: Does the Future, the Present or the Past more clearly reveal to us the eternal and invisible essence of Nature?

We have now to attack the question which we have seen

is not solved by the Category of Cause and Effect. What is the objective law, concept, or notion, which makes the difference between Past and Future, or must we regard the problem as insoluble and admit that the difference is purely subjective and based on momentary feeling? Nature reveals herself as a plurality of units (Moments) in a fixed order, but more, there is a certain direction in this order. What does this direction mean? The units themselves (as appearance) do not contain this meaning, this difference. Is there, then, some transcendent quality existing in the Present in a greater degree than in the Past, and in the Future in a greater degree than in the Present?

Static reflexion as distinguished from personal and historical experience—cannot answer this question, for it only regards the Time Moments as having an external relation to each other. *Apart from conscious existence in the time-series the Time-direction is indifferent.* Mathematics, pure and applied, are the best illustrations of this. For these time is a one-dimensional quantity like a straight line ($\pm t$). This is obviously true in Algebra, Geometry and Statics, and I have shown that it holds for Dynamics. It is true, though not so obvious for every abstract science—that is, for every science except Ethics, which is the only science whose direct object is personality as actually existing in concrete, and not as an abstraction. All natural and experimental Sciences abstract from self-consciousness. The essential thing in these is continuity and arrangement in definite order. It seems paradoxical, but is nevertheless true, that in these abstract Sciences the time-direction is of no consequence. Scientific laws may be expressed in logical form, *e.g.*, All A is B, and this form is independent of the Time; or they may be expressed in continuity form: If A is, B follows in Time. But the essence of this law is expressed in the statement that A and B are juxtaposed in a continuum, a *conventional* direction being assumed. The whole order might be reversed, and we could say: If A is, B *preceded*; no error would ensue, because the relation of Past and Future is here quite abstract and conventional. Evolution does not alter this argument. The same is true even of empirical psychology, which in its laws regards states of mind as different entities arranged in a certain order. It is only in their ethical application that the laws of abstract sciences become concrete. The laws have a concrete origin, they are discovered by persons acting from ethical motives, and in like manner they have a concrete application. A scientist, in expressing these laws, naturally takes the order in which they were actually revealed to him

as the most convenient one for statement, but this does not alter the fact that, expressed as abstract general laws, Time is regarded as a one-dimensional continuum; and they do not invoke any notion of time direction unless they are brought into *express* connexion with self-consciousness. This is done in the practical application of the laws. "Science must treat the world of objects as self-subsistent in abstraction from the knowing subject,"¹ and when this abstraction is made, the Time-direction, though not the Time-order, is indifferent. Every science deals with a mere plurality of objects; its general laws state connexions between objects or classes of objects.

The essential difference between Past, Present and Future has, I conclude, no meaning when Nature is regarded externally, that is, as a complex of lifeless phenomena. Externally viewed, Nature is a unity possessing an infinite series of phases (Moments). Each phase is necessarily connected with the contiguous phase on either side of it, in the one-dimensional continuum of Time. But no Time-direction emerges from this view of Nature. The Time-direction only emerges when the mind returns to itself and views Nature internally or from the subjective point of view. The subject, so to speak, puts life into Nature, which otherwise appears as a lifeless connexion of units, arranged in a determinate order, but possessing no *direction*.

We have now arrived at a most important truth. *The irreversibility of the time-direction is purely psychical*; we cannot therefore treat the time-order in an abstract formal way as Kant did; for if we do so, we shall never get beyond the continuum idea; for the meaning of the Time-direction we must have recourse to concrete personal experience. Thus the subjective or psychological method of interpreting the Time-direction is indispensable as a starting point; for its objectivity is primarily revealed to us through its subjectivity. Anthropomorphism is here justifiable and necessary, for the time-direction is actual for a conscious Time subject, and not actual when we abstract the conscious subject. The mind apprehends each of its phases (sub-phases of Nature) as a present consciousness. The subjective question will be what qualitatively differing feelings or sensations are there in present consciousness, which give rise to the conception of a qualitative difference in the direction in which Time-units move?

Our first appeal, therefore, will be to direct psychological

¹ Mr. T. F. Underhill, *MIND*, April, 1904.

observation. The subjective meaning of the Time-direction will emerge from an analysis of the units of consciousness. By a unit of consciousness I merely mean a concrete synthesis of which one is immediately conscious. These units are the ultimate data of observational psychology. Every such unit is really an instantaneous phase of the Ego, and the bridge between preceding and succeeding units. Each unit thus involves two elements, memory and expectation. Of course it is only by repetition and comparison that these elements emerge as distinct. The unique quality of the memory-element is the subjective basis of a conception of *past* time; the unique quality of the expectation-element is the subjective basis of a conception of *future* time. Subjectively then, the conception of past time has for its empirical basis a perception of the quality common to all memory sensations; to avoid abstraction we may describe it as individualised in a unit of consciousness, or a remembered series of such units, in which the memory element is specially prominent. In like manner the conception of future time is individualised in a unit of consciousness—or remembered series of such units—in which the expectation element is specially prominent. The subjective conception further of past time as a series arises thus: A series of units occur. Each unit as it occurs contains in itself a memory of the last, and contrast as well as resemblance therewith. The *contrast* makes us conscious of a difference in the units, the *resemblance* gives a sense of a unity or connexion. Each unit has a direct contrast with its neighbour. Thus in a given unit you have a memory of a contiguous memory of a contiguous memory, etc. This can be imaged only by a spatial continuum. How does the sense of a unity of the series arise? To answer this we must remember that each unit is a phase of the Ego. The unity of the Ego is given in the unit, and in each unit past units are presented as memories and so as phases of the present unity. Thus there is only one series, as only one Ego is conceivable. When once we have imaged the past as a spatial continuum (most simply a line) with the present Ego at one end of the line, there rises inevitably a thought of this line extended indefinitely in the other direction; and this in connexion with the expectation-sensation gives a conception of future time as a series.

The subjective root of our concept of future and past time is, however, not expectation and memory in a passive sense only; it includes desire and aversion generally, that is, a sense of mental activity. Desire involves imagination, by help of past experience, of a phase of the Ego different from,

and more pleasant than, the present phase. Primarily this image of the Ego is subordinate to the present Ego, and quite static—merely an ideal. Secondly, the present Ego-phase strives inevitably to pass into the imagined pleasanter Ego phase, *i.e.*, it strives to exclude all perceptions which are imagined as non-existing in the ideal Ego-phase. There is thus a conscious effort to expel certain perceptions—aversion, a negative self-destructive activity of the present Ego, which in its entirety rejects and repudiates some of its parts. This aversion, when successful, intensifies the conception of past time. In like manner Desire is a positive activity, a conscious effort on the part of the present Ego to give the fullest possible intensity to the imagined pleasant Ego-phase. Thus desire intensifies the conception of future time. It may be noticed that the subjectivity of these processes is strongly apparent in that *eidolon tribus* to which most of us are subject—the tendency to persuade ourselves that what is pleasant is true, and what is unpleasant is false. Fear may be termed negative desire, and is distinguished from aversion as being directed not against the elements in the presented Ego-phase, but against an imagined Ego-phase. Fear also evokes the conception of future time. In like manner the feeling *Relief* is successful aversion, and tends to strengthen the concept of past time. Generally speaking, the Past is that which evokes only a theoretical interest and cannot be an object of desire. The Future evokes a lively practical interest, and is necessarily an object of desire in some form. *Desire, then, is the subjective element which gives a meaning to the distinction between Past and Present.* The mind is passive in relation to the Past, active in relation to the Future. Without desire, there can be no self-conscious existence in Time.¹

We may inquire whether this hypothesis has an immediate practical application. An event B follows A; we say then that A is not, and B is. Our attitude towards the perceptions given by A is this: They are thrown away, they are no longer possible objects of our desire, they have, so to speak, a merely theoretical interest. It is true that so-called consequences survive, and have an immediate practical interest, but consequences are *ipso facto* in the Present, B. The Future, on the other hand, has a practical interest, it is an object of desire (including curiosity), and has a *real* meaning in the Present.

¹ Since writing this article, I have been informed that Dr. Hodgson's psychology of the 'Time-stream' is virtually the same as the above.

The above may be regarded as a solipsistic exposition of the genesis of a conception of the Time-direction. If I were the only Ego, further discussion would be superfluous. I could say Past Time is the abstract form which memory (including successful aversion) creates for itself, and Future Time the form which expectation (including desire) creates for itself. The Past would be a thin psychological residue of numerous memories and successful aversions, and similarly for the future. It would be idle to ask: Does consciousness presuppose the time-direction, or conversely? The concrete elements of consciousness are the given realities, the form is abstract and ideal.

But I am not the only consciousness. Where, then, does the conception of the objective unity of the Time-direction arise? We have three degrees of psychical unity. First, the unity of a unit of consciousness—here the conceptions referred to originate; secondly, the unity of the Ego through all its units; thirdly, the unity of the experience of all conscious beings.¹ The objective unity of the Time-direction exists as the same conception for all conscious beings, it must therefore involve, in so far as its objective nature can be understood, the conception of a Collective Will of conscious beings. *There is one Time-direction for all in so far as they will the same thing.* The unity of the Time-direction is thus a mere hypothesis except on the assumption of a universal object of will common to conscious beings who have a rational consciousness of their existence in Time. That all minds which are capable of a rational knowledge of Nature are the expression of a Concrete Unity, and in their Unity aim at a single end (the Future) is the assumption necessary to justify our conviction that there is one Time-direction common to all conscious beings.

Time, then, primarily a one-dimensional continuum is directed by the motion of Objective Will. The Future is the direction in which Objective Will proceeds. This assumption is necessary to give the conception of unified force. The direction, however, is not arbitrary but essential. The Will proceeds not according to fickle choice, but according to a single principle actualised in the other direction of the Future. There must, in short, be a continuous

¹ The subjective conception of the Time-direction is created by desire. It has been shown, further, that the Time-direction has only a psychic meaning. It follows that its universal meaning can be no more than an extension of the immediate meaning which it has for the individual. This is the fulcrum of the argument which is not however solipsistic but personal.

motive urging objective will, whose process is now seen to be development or evolution, the unfolding of something which did not exist before and which is *inevitably progressive*; and not to be identified with any collocation of things in Nature viewed externally. I have endeavoured to show, in fact, that the mere Form of Time necessarily implies a certain continuous development of some unique Quality in Nature *viewed psychically* (the abstract or external point of view gives mere continuity). This Quality belongs to the Time Moment as a whole, not to its isolated parts. The Present contains more of the Quality than the Past, and the Past than the Future. We have seen that the Time-direction has a psychical meaning only; but since their direction is only the form in which the Quality appears, it follows that the Quality has a psychical meaning, and since the Time-direction is objective and universal, so is the Quality. It is, in other words, that which is an object of Universal Will. When two persons will the *same* object, they are in touch with this secret of Nature. To will the same object does not mean merely to have harmonious wishes, which can both be gratified, but to will something as an absolute end. Now, in this conception (a common object of will) we have the innermost germ of morality. It is what Green calls an absolute and common good, and is, of course, clearly involved in Kant's conception, the universality of the moral law. *The Quality, therefore, at which Nature herself aims is 'An absolute and common good,'* a good common to all rational beings, *i.e.*, those endowed with the capacity for conceiving a common good.

Here are the heads of the whole argument. From the formal point of view Time is primarily a one-dimensional continuum, a series of units. The schema of Time is only a subterfuge to escape from this. The law of irreversible dependence (cause and effect) does not make it otherwise; for we have seen that the Past as well as the Future may be uniquely deduced from the Present. But when we come back to experience, we find that the mind *does* view the Past in a different light from the Present; and the felt distinction between desire and indifference is the subjective root of this distinction, we conclude that the Time-direction is not abstract but psychical—determined by Will. But the will must be objective, for Time-direction is objective. Hence Time is the form of continuous development of some Quality which is a necessary motive for objective or Universal Will.

This conclusion as to the objective basis of the Time-direction is, I believe, the only solution of the problem

raised. It has the further advantage of connecting intellectual philosophy with the Ethics of pure Duty (as exhibited by Kant) and with the philosophy of Religion. Duty requires that a rational being should act according to the conception of universal law, thus making his will objective. The above doctrine shows that every being who is completely and rationally conscious of his existence in Time must make his will objective—he must freely submit to the laws of Nature, regarding them as the expression of his own will, and at the same time as aiming at an absolute and common good. Thus the way is paved for Religion, which extricates us from the inevitable solipsism—involved in saying that a rational being recognises the laws of Nature as the expression of his own will—by providing the conception of a Supreme Spirit who is immanent in Nature—to Whom rational beings freely yield their wills.

VI.—SYMBOLIC REASONING (VI.).¹

BY HUGH MACCOLL.

1. THERE is no question on which logicians are so divided as that of the "Existential Import of Propositions". When we make any affirmation A^B , or any ² denial A^{-B} , do we, at the same time, implicitly assert that the subject A really exists? Do we assert that the predicate B really exists? Do the four technical propositions of the traditional formal logic, namely, "Every (or all) A is B," "No A is B," "Some A is B," "Some A is not B," necessarily imply the actual existence of the class A? Do they necessarily imply the actual existence of the class B? These are questions upon which logicians have expended a great deal of thought and no small amount of ink; yet they appear to be as far from coming to an agreement upon them as ever. A simple theory of the subject, a theory to which they could all subscribe, should therefore be welcomed as a real boon. Such a theory I hope to be able to offer in what follows.

2. Let e_1, e_2, e_3 , etc. (up to any number of individuals mentioned in our argument or investigation) denote our universe of *real existences*. Let $0_1, 0_2, 0_3$, etc., denote our universe of *non-existences*, that is to say, of unrealities, such as *centaurs*, *nectar*, *ambrosia*, *fairies*, with self-contradictions, such as *round squares*, *square circles*, *flat spheres*, etc., including, I fear, the non-Euclidean geometry of four dimensions and other hyper-spatial geometries. Finally, let S_1, S_2, S_3 , etc., denote our *Symbolic Universe*, or "Universe of Discourse," composed of all things real or unreal that are named or expressed by words or other symbols in our argument or investigation. By this definition we assume our Symbolic Universe (or "Universe of discourse") to consist of our universe of realities, e_1, e_2, e_3 , etc., together with our universe of unrealities, $0_1, 0_2, 0_3$, etc., *when both these enter into our argument*.

¹ For V., see MIND, July, 1903.

² The symbol A^{-B} is here used as a convenient symbol for $(A^B)'$, the denial of the proposition A^B (see the *Athenæum*, 5th September, 1903).

But when our argument deals only with *realities*, then our Symbolic Universe S_1, S_2, S_3 , etc., and our Universe of realities, e_1, e_2, e_3 , etc., will be the same; there will be no universe of unrealities $0_1, 0_2, 0_3$, etc. Similarly, our Symbolic Universe may conceivably, but hardly ever in reality, coincide with our universe of unrealities.

3. Now, suppose we have a class A. The individuals, A_1, A_2, A_3 , etc., compassing it must necessarily all belong to the Symbolic Universe S; but whether they all belong to the universe of realities e , or all to the universe of unrealities 0, or some to the universe e and the rest to the universe 0, depends upon the particular circumstances of our argument or investigation. When a class A belongs *wholly* to the universe e , or *wholly* to the universe 0, we may call it a *pure* class; when it belongs *partly* to the class (or universe) e and *partly* to the class 0, we may call it a *mixed* class. The *negative* class 'A (with a grave accent) consisting of the individuals 'A, 'A₂, 'A₃, etc., contains all the individuals of our symbolic universe which do not belong to the positive class A. Hence, the class 'e is synonymous with the class 0; and the class '0 with the class e . The class 'A may be called the *complement* of the class A, because both together make up the Symbolic Universe.

4. The subject A of any affirmative proposition A^B , or of any denial A^{-B} , is always understood to denote a *single individual*. If A happens to be the name of a class, then, in any proposition A^B or A^{-B} , the subject A is understood to denote a certain known, or previously indicated, individual of the series A_1, A_2, A_3 , etc., whose special name or number it is unnecessary to state. For example, suppose A denotes *American*, and B *barrister*, the proposition A^B will then assert that "the *American* is a *barrister*". It does not say *which* American out of the whole series A_1, A_2, A_3 , etc., is referred to; that is supposed to be known. When it is necessary to state which, then, instead of A^B , we must write A_1^B , or A_2^B , or A_3^B , as the case may be.

5. Let S be any individual taken at random out of our Symbolic Universe S, and let a, a', b, b' , etc., be synonymous respectively with S^A, S^{-A}, S^B, S^{-B} , etc. We then get the following self-evident or easily proved formulæ, which we will name F_1, F_2, F_3 , etc.

- (1) A^S ; (2) $(S^A)^{-S}$; (3) a^{-S} ; (4) a^S ;
(5) $(A)^S$; (6) $(S)^S$; (7) $(A)^{-A} + (A \equiv S)$.

The formula F_6 looks somewhat paradoxical; but it can be easily proved. By our definitions (see §§ 2, 3), the symbol 'S denotes an individual that does not belong to the class S.

But, by definition, the class *S* denotes the *whole Symbolic Universe* (or "universe of discourse") to which every individual (real, unreal, or self-contradictory) named in our argument *must* belong. Hence, '*S*' is a self-contradiction. But, by our definition, all self-contradictions belong to the class *O*. Hence '*S*' must belong to the class *O*. But, by definition, the Symbolic Universe *S* contains all the individuals O_1, O_2, O_3 , etc., of the class *O*, as well as all the individuals e_1, e_2, e_3 , etc., which belong to the class of realities *e*. Hence, '*S*' must belong to the class *S*. In other words, the formula ('*S*')^s, denoted by F_6 , is always true. The preceding reasoning is a syllogism of the Barbara type, which may be expressed briefly as follows: "Every '*S*' is *O*, and every *O* is *S*; therefore every '*S*' is *S*". The last formula F_7 asserts that an individual of the negative class '*A*' does not belong to the positive class *A*, except when *A* is synonymous with *S* and therefore denotes the whole Symbolic Universe. This Symbolic Universe, or "Universe of Discourse," may enlarge as the argument proceeds, seizing, appropriating, and firmly retaining every new entity (not excepting self-contradictory entities like '*S*') which we designate by a symbol. Suppose for example, that in the course of our argument we have had to speak of several classes, *pure* or *mixed* (see § 3), and that all the individuals of all these classes amount to 82, of which 80 belong to the class *e*, and 2 to the class *O*. Then, up till now, our Symbolic Universe *S* contains 82 individuals, so that we have

$$S = (S_1, S_2, \dots S_{82}) = (e_1, e_2, \dots e_{80}, O_1, O_2).$$

A fresh arrival '*S*' enters our Symbolic Universe, which immediately widens to make room for it; but the question has to be decided whether the stranger is to enter the class *e* or the class *O*, just as parents have to decide the sex of a fresh addition to their family before they know whether to call it *Eva* or *Oscar*. The question presents as little difficulty in the one case as in the other; the new comer '*S*' (or S_{83}) is immediately recognised as belonging to the class *O*, so that now we have

$S = (S_1, S_2, \dots S_{83}) = (e_1, e_2, \dots e_{80}, O_1, O_2, O_3)$,
the new comer '*S*' (or S_{83}) being synonymous with the new comer O_3 .

6. If every individual of a class *A* (whether a *pure* or a *mixed* class) belongs also to another class *B*; then, and then only, we say that "Every (or all) *A* is *B*". If this is not the case—if even a single *A* is excluded from the class *B*; then we say that "Some *A* is not *B*". If every individual in the class *A* be excluded from the class *B*; then, and then

only, we say that "No A is B". If this is not the case—if a single individual of the class A belongs also to the class B; then we say that "Some A is B". For example, let the class A consist of the five individuals S_1, S_2, S_3, S_4, S_5 ; let the class B consist of the eight individuals made up of the preceding five individuals together with the three S_6, S_7, S_8 ; and let the class C consist of the three S_7, S_8, S_9 . More briefly expressed, let $A = (S_1, S_2, \dots S_5)$; let $B = (S_1, S_2, \dots S_8)$; and let $C = (S_7, S_8, S_9)$. Then, whether any of these three classes, A, B, C, be *pure* or *mixed* (see § 3), the following propositions follow necessarily from our data:—

- (1) Every (or all) A is B, (2) Some A is B,
- (3) Some B is A, (4) Some B is not A,
- (5) No A is C, (6) Some A is not C,
- (7) No C is A, (8) Some C is not A,
- (9) Some B is C, (10) Some B is not C.

Any of the three classes A, B, C may consist wholly of realities, or wholly of unrealities, or it may be a mixed class containing both; whatever hypothesis we take in that way, the preceding ten propositions are true. (See § 11.)

7. We may sum up briefly as follows: Firstly, when any symbol A denotes an *individual*; then, any intelligible statement $\phi(A)$, containing the symbol A, implies that the individual represented by A has a *symbolic* existence; but whether the statement $\phi(A)$ implies that the individual represented by A has a *real* existence depends upon the context. Secondly, when any symbol A denotes a *class*, then, any intelligible statement $\phi(A)$ containing the symbol A implies that the whole class A has a *symbolic* existence; but whether the statement $\phi(A)$ implies that the class A is *wholly real*, or *wholly unreal*, or *partly real and partly unreal*, depends upon the context.

8. For example, let M denote "the *man* whom you see in the garden"; let U denote "my *uncle*"; and let $\phi(M, U)$ denote the statement "The *man* whom you see in the garden is my *uncle*". In this case we generally have

$$\phi(M, U) : M^e U^e.$$

That is to say, the statement $\phi(M, U)$ would generally imply that both M and U really exist. Next, let B denote "a *bear*," and let $\phi(M, B)$ denote the statement "The *man* whom you see in the garden is really a *bear*". Here we should generally have

$$\phi(M, B) : M^0 B^e.$$

That is to say, the statement $\phi(M, B)$ would generally imply that B really exists, but that the individual M is imaginary—a mere optical illusion. Now take the state-

ment $\phi' (M, B)$, which denies $\phi (M, B)$ and asserts that "The *man* whom you see in the garden is *not* a *bear*". Here we should generally have

$$\phi' (M, B) : M^e B^e.$$

That is to say, the denying statement $\phi' (M, B)$ would usually be understood to imply that *M* (the *man* seen in the garden) really exists, but that the particular *bear* spoken of is imaginary and non-existent. Lastly, take $\phi' (M, U)$ which denies $\phi (M, U)$ and asserts that "The *man* whom you see in the garden is *not* my *uncle*". Here we should generally say

$$\phi' (M, U) : M^e;$$

but not necessarily $\phi' (M, U) : U^e$. That is to say, the denying statement $\phi' (M, U)$ would usually imply the real existence of the *man* *M*, but not necessarily the real existence of "my *uncle*"; for the negative statement $\phi' (M, U)$ might be true even on the supposition that neither my father nor mother ever had a brother, so that the supposed uncle had never existed. Similarly, we may give examples of the implied existence or non-existence of *classes*, and show that as regards *real* and not mere *symbolic* existence, no absolute rule can be laid down; that, in each case, the conclusion depends upon the particular nature of the statement and upon the general context.

9. The preceding discussion seems to me to point to a serious and fundamental error in the commonly accepted systems of symbolic logic, founded on the Boolean principle of class-inclusion. These usually denote the class of individuals common to the classes *A* and *B* by the symbol *AB*, and they employ the symbol ($A=AB$) to assert that the class *A* and the class *AB* are the same, every individual in either being also found in the other. Thus interpreted, they say, and say truly, that the statement of equivalence ($A=AB$) is equivalent to the traditional "All *A* is *B*," or "Every *A* is *B*". So far I agree with them. But when they define 0 (or any other symbol) as indicating non-existence, and then assert that the equivalence ($0=0A$) is always true, whatever the class *A* may be, they appear to me to make an assertion which cannot easily be reconciled with their data or definitions. For suppose the class 0 to consist of the three unrealities $0_1, 0_2, 0_3$, and the class *A* to consist of $0_3, e_1, e_2, e_3$ (one unreality and three realities), the class $0A$ common to both contains but one individual, the unreality 0_3 . We cannot here say that the class 0, which contains three individuals, is the same as the class $0A$, which contains but one; neither can we say that every one of the three in-

dividuals $0_1, 0_2, 0_3$, which form the class 0 , is contained in the class A , which only contains one of them, namely, 0_3 . And, *a fortiori*, an *infinite* class ($0_1, 0_2, 0_3$, etc.), cannot be contained in a *finite* class $0A$, where $A = (A_1, A_2, \dots A_m)$.

10. If in my system of logic my formula $(\eta = \eta A)$ asserted that the class η and the class ηA contained exactly the same individuals, this formula would be open to exactly the same objections as the formula $(0 = 0A)$ just criticised. But my formula $(\eta = \eta A)$ does *not* assert this; it only asserts the truism expressed by the double implication $(\eta : \eta A) (\eta A : \eta)$, namely, that it never happens that either of the two *statements* η and ηA is true while the other is false. The formula is equally valid in the form $(\eta_1 = \eta_2 A)$, whatever be the impossibilities η_1 and η_2 , and whatever be the statement A . For, by a linguistic convention which I believe all logicians accept, any compound statement, say ABC , is considered *true* when, and only when, *all* its factors, A , B , and C , are true; but it is considered *false* if it has a *single false factor* A . Consequently, it must be *impossible* (or *always false*) if it has a single impossible factor η . Hence, $\eta_2 A$ is impossible because of the factor η_2 . We may therefore denote $\eta_2 A$ by η_3 (impossibility No. 3), so that the formula $(\eta_1 = \eta_2 A)$ will then be equivalent to $(\eta_1 = \eta_3)$. Now, by definition,

$$(\eta_1 = \eta_3) = (\eta_1 : \eta_3) (\eta_3 : \eta_1) = (\eta_1 \eta'_3)^\eta (\eta_3 \eta'_1)^\eta.$$

But $\eta'_3 = \epsilon_1$, and $\eta'_1 = \epsilon_2$; for ¹ the denial of any impossibility η_x is some certainty ϵ_y , so that the denial of η_3 is a certainty which we register as ϵ_1 , and the denial of η_1 is another certainty which we register as ϵ_2 . Hence, by substituting ϵ_1 for η'_3 , and ϵ_2 for η'_1 , we get

$$(\eta_1 = \eta_3 A) = (\eta_1 = \eta_3) = (\eta_1 \epsilon_1)^\eta (\eta_3 \epsilon_2)^\eta = \epsilon_3 \epsilon_4 = \epsilon_5.$$

11. Another disputed question which the preceding theory of the "Existential Import of Propositions" appears to decide is the validity or non-validity of the four traditional syllogisms, Darapti, Felapton, Fesapo and Bramantip. Now, as I pointed out in *MIND*, July, 1902, § 32, not one syllogism out of the whole nineteen is valid in its traditional form $PQ \therefore R$, as in this form it asserts without warrant that the two premisses P and Q are both true. In this form therefore any syllogism is false whenever either P or Q is false. To

¹ The denial of a certainty is an impossibility, the denial of an impossibility is a certainty, and the denial of a variable is a variable. If the chance of A is a , the chance of A' is $1 - a$. When $a = 1$, then A is a certainty and A' an impossibility. When $a = 0$, then A is an impossibility and A' a certainty. When a is some fraction between 1 and 0, then $1 - a$ is also a fraction between 1 and 0, so that, in this case, A and A' are both variables.

render the syllogism valid, it should be written in the form $PQ : R$ ("If P and Q are true, then R is true"). Thus written, if in any syllogism we substitute for P, Q, R its special premisses and conclusion, we shall find that $PQ : R$, which means $PQR' : \eta$, is a formal certainty, whatever syllogism out of the nineteen we take as an example. Take Darapti, one of the four considered doubtful. Darapti, in its corrected or conditional form, says this, "If every B is C, and every B is A, then some A is C". This is supposed to fail when B is non-existent while A and C are existent but mutually exclusive. Let us see. Suppose

$$B = (0_1, 0_2, 0_3), C = (e_1, e_2, e_3), A = (e_4, e_5, e_6).$$

Here we have

$$P = \text{Every B is C} = \eta_1$$

$$Q = \text{Every B is A} = \eta_2$$

$$R = \text{Some A is C} = \eta_3,$$

three statements each of which contradicts our data, since, by our data in this case, the three classes A, B, C are mutually exclusive (see § 6). Hence, in this case, we have

$$(PQ : R) = (\eta_1 \eta_2 : \eta_3) = (\eta_4 : \eta_3) = (\eta_4 \eta'_3)^n = \epsilon_1; \quad *$$

so that Darapti, in its corrected form $PQ : R$, does *not* fail in the case supposed.

12. The fallacious reasoning by which the Boolean logicians have arrived at the conclusion that Darapti, even in its corrected form $PQ : R$, is not valid, is founded on the assumption that their definitions of their symbols lead to the conclusion that the statement $(0 = 0A)$ is a formal certainty; whereas, consistently with their definitions, this statement may be either true or false. For example, in the case $B^0 A^e$, given in § 11, the statement $(0 = 0A)$ is false.

13. It is curious that, by fallacious reasoning of a totally different kind, I formerly arrived at the same erroneous conclusion as the Boolean logicians about Darapti and the other three doubtful syllogisms. Finding, firstly, that the implication of the second degree

$$(b : c) (b : a) : (a : c)'$$

which, I may denote by $F(a, b, c)$, expresses Darapti on the assumption that the propositions a, b, c have all three the same subject, namely, *an individual taken at random out of our "universe of discourse"*; and finding, secondly, that this formula, considered as a *general* formula, with no necessary reference to Darapti or any other syllogism, fails in the case $b^n (ac)^n$, I concluded, a little too hastily, that Darapti must also fail in this case. In this I overlooked the fact that, though the case of failure $b^n (ac)^n$ may arise in the *general* formula $F(a, b, c)$, when a, b, c are understood to be wholly *unrestricted*,

the case need not arise, and, as a matter of fact, cannot arise when the propositions a, b, c are subject to the restrictions which render $F(a, b, c)$ equivalent to Darapti. For these restrictions necessarily imply $a^{-\eta} b^{-\eta} c^{-\eta}$ (see § 5, Formulæ 2, 3).

14. Bearing upon this and similar pitfalls which waylay the too hasty investigator, in whatever branch of science, when he ventures to stretch his formulæ beyond their proper limits, the following rules and cautions may be found useful. Let ϕ_u denote any formula $\phi(x, y, z, \text{etc.})$ when the variables, $x, y, z, \text{etc.}$, have an *unrestricted* (or very wide) range of values; and let ϕ_r denote the same formula when the variables have a *restricted* range (or a narrower range within the same limits). Then, employing the symbol ϕ^e to assert that ϕ is true for *all* admissible values of its constituents, $x, y, z, \text{etc.}$, we have the true formula $\phi_u^e : \phi_r^e$; but we have no right to assume the converse formula $\phi_r^e : \phi_u^e$, nor its equivalent, the formula $\phi_u^{-e} : \phi_r^{-e}$. The assumption $\phi_r^e : \phi_u^e$ is the common fallacy in scientific researches of a too hasty induction, which erroneously supposes that the validity¹ of ϕ_r implies the validity of ϕ_u . The assumption $\phi_u^{-e} : \phi_r^{-e}$ which erroneously supposes that the non-validity of ϕ_u implies the non-validity of ϕ_r , is the fallacy which formerly led me into the error referred to in § 13.

¹ Any formula $\phi(x, y, z, \text{etc.})$ is called *valid* when we have ϕ^e ; that is to say, when the formula is true whatever values, within the limits of our data, we assign to the variables $x, y, z, \text{etc.}$ The statement ϕ^{-e} , that ϕ is *not* valid, does not imply ϕ^v , that it is *never* true.

VII.—DISCUSSIONS.

THE PARADOX OF PSYCHOLOGY.

THE paradox of psychology springs to view as soon as we put together a few admitted facts. These are: (1) Psychology is science not history, not the description of a particular man's Consciousness or Conscious Life, but of such life in general; the psychologist therefore is more than the individual merely observing himself; towards the great mass of his material he is bystander or spectator. But (2) no direct apprehension of conscious life is possible to any one but the subject of that life; therefore the psychologist must draw primarily (both in the logical and temporal sense) from self-observation, and by means of what he is aware of in himself must interpret such external and to some extent dubious signs as others may give of their consciousness. Finally (3) it is conceded that of our conscious life both as a whole and in its details we may be unaware, or at least misapprehend it; we are seldom in any degree (and never in the fullest degree) such bystanders to, such discriminating spectators of, our own conscious life, as the Psychologist (sanguine man!) desires to be of that of all men and even that of animals. Surely these admitted facts considered in combination constitute a genuine paradox. And of two misunderstandings, either of which helped to conceal the paradox, we have finally got rid. We are no longer misled by the word 'consciousness'; though we use it to cover both the mere feeling of anger and the awareness that I am angry (its earlier and most proper sense), we know that these two 'states' are different and often actually separated from one another: we would banish if we could the word 'consciousness' as fatally ambiguous. On the other hand we are no longer misled by the notion that we have an Inner Sense or Organ of what Locke called Reflexion, a special gift by which we apprehend our mental states in their nature and in their relation to our life as a whole. Are we then reduced to saying that whenever we are conscious, we *may* be conscious of that consciousness but usually *are* not, and at the best are only imperfectly so? that the secondary consciousness is a mere lucky chance or gift, and that it is on what is supplied by this rare, inexplicable *θεία δόρυ* that all psychology has to build? A statement so purely empirical seems painfully out of harmony with a scientific treatise. It is true that the writer on Light has to speak of different colours, whose difference is barely

empirically known; but at least he brings these into connexion with one another *physically* by the relations between their wavelengths, and perhaps he will ultimately bring them into mutual connexion *physiologically* by relations between them and the special parts of the optical nervous system. And are we psychologists to be content to say, that we go through various phases of Consciousness, and that if we can also observe them it is lucky—but that as to the conditions of our observing them and of observing them truly we have nothing to say?

It seems to me that having once erred in one extreme, we are now by recoil being driven to an extreme not less erroneous. It is very well to startle beginners or those who have been brought up in a bad school by pointing to Sir Anthony Absolute, angry and unconscious of his anger. The example, striking as it is—or was till it became hackneyed—is not really a very good illustration of what it wishes to illustrate. Sir Anthony's fault was certainly not lack of self-consciousness, not such exclusive concentration on the object of his mood that he had no attention to give to himself and his own mood. It was rather because he thought of himself as a father and as exercising the calm but authoritative control proper to a father that he failed to see that he was really in a furious passion not essentially different from that of a child whose toy has been taken from it. It is owing to that 'relative inattention' (of which Dr. Stout for instance speaks so clearly in his new text-book—*Groundwork*, pp. 54-56) that we are in general barely aware of our own 'mental states' and so apt to misdescribe them if some one forces us to attend to them. But that we are ever *absolutely unaware* of them seems incredible and absurd. I do not, as will be anticipated, rely on the old argument that 'to feel and to feel that we feel'—or even that 'to know and to know that we know'—'are one and the same thing'; there is a real truth at the bottom of such expressions, but they are apt to be expanded into doctrines that are very far from true. I simply ask how after all even a man totally absorbed in his object, like the cigar-smoker of Dr. Stout's *Manual* (p. 1), can really *know* that object or be led to deal with it in any manner (supposing his purpose to be *πρᾶξις* and not *γνώσις*) except through his subjective consciousness. Dr. Stout truly says (*Groundwork*, p. 56) that we are 'to a large extent inattentive to' the varying magnitude and outline of the visible appearance of things seen at different distances and from varying points of view. But, as he goes on to say, 'the optical sensation suggests the real shape and magnitude, and to this we do attend'. Yes, but there must also have been attention (as part, no doubt, merely of a wider attention) to the sensations itself. And my point—the only point in this paper for which I claim any novelty—is that, if our attention to the object is baffled and unsuccessful, if we cannot make out what it is or where it is, or what is its size or what is its shape, we are then thrown back upon and become intensely aware of our own sensations, and clearly

discriminate them from the external object as something which must be clearly apprehended and fully analysed before we can attain to the apprehension of the external object. We may say the same thing of an emotion—*e.g.*, Anger. Active, successful, progressive Anger may well be unaware of itself. Anger 'is essentially a general impulse to crush and destroy' (Stout, *Manual*, p. 322). The angry man, then, when successfully pounding and hammering the man who stops his path, or the argument that conflicts with his opinions, or the resistance of an opposing will, will be almost quite inattentive to his own anger. But how, if he is baffled? he then has nothing but the angry impulse itself; and in unsuccessfully trying to gratify it he cannot fail to become more distinctly aware of what he wants, of his impulse in fact to crush and destroy something. Whether he calls this impulse 'anger' or by some other name is of secondary importance. Probably, like adults generally, he knows what anger means and therefore that it is anger that he feels; and if he will not give this ugly name to his emotion, it is because it is ugly, and he is trying to impose on himself. But in more complex cases it may well be that the man is really conscious of his 'state' but misdescribes it or fails to describe it at all, either from want of analytic power, or from the lack of practice in analysis which is the chief cause of that want, or simply from the scantiness and vagueness of his psychological vocabulary. The higher feats of self-consciousness may be explained on the same principle. What is meant by the now general admission that the development of self-consciousness is due to social life? Is it not that in social life we are pitted as individuals against other individuals and are thereby—since our will is continually obstructed—forced to take stock of ourselves and others, probably in the first place of others, while of ourselves it is largely true that 'the eye sees not itself but by reflexion in some other thing' and it is the sense that we figure as finite individuals to others that forces us to admit our own finitude and definite determinateness to ourselves?

J. SOLOMON.

VIII.—CRITICAL NOTICES.

Biographia Philosophica. By Prof. CAMPBELL FRASER, D.C.L.
etc., etc. Edinburgh: Blackwood, 1904. Pp. xiv, 335.

PROF. CAMPBELL FRASER names this a "Retrospect". As a retrospect it must, in its own nature, and on every count, have been a pleasure to him; and at least simply a pleasure, I think, it must prove to its many, and already perhaps mostly not unfamiliar, readers. Nor, if as much as this seems more particularly to concern the *Biographia*, is it to be said that the *Philosophia* has been less well tempered. Quite happily, indeed, the *Biographia* begins with the *Philosophia* that shall run, it may be, from end to end of the book; for it opens at once thus:—

"Perplexities of religious thought have been at all times springs of metaphysical reflexion. It was by them in crude forms that I was first attracted to inquiries which have engaged my life. The originating cause of the universe in which I found myself, and how I could know that this cause was God, were questions that disturbed my boyhood seventy years ago. . . . In an endless life, how can I, a million times a million years after this, remember anything that has happened in the present century, or have interest in, or identity with, the boy now living on this earth? . . .

"What am I? What sort of universe is this in which I find myself? What is to be its final upshot and mine?"

It is only as having begun with *Philosophia* thus, that he turns now to *Biographia*, and the particulars of his birth and ancestry; and on both Prof. Fraser has grounds to congratulate himself. He is a son of the Manse, and this Manse is lonely enough; but it has both charming sea and rugged mountain to look upon, while neither of them is unlegendary, unhistorical. Then for ancestry, a Fraser and a Campbell setting out into the world is again but as the young Durward, who, to the question, "Is it a gentleman's name?" could fierily reply, "By fifteen descents in our family!"

But the Manse had its within as well as its without; and its influences thence on the young Fraser are not to be counted one whit less. With his father, who had "passed his youth in the Puritan atmosphere which sheds awful solemnity over human life," there was, naturally, "Calvinistic orthodoxy at the manse". His mother, again, "had been educated in England, and afterwards lived

much in the South"; and so, if she "trained her son in the Bible" till "Old Testament History actually filled his imagination," she did not fail to inspire him also "with her own Anglican enthusiasm," which, at the same time, however, must have taken colour, it would seem, from the evangelical doctrine of the "Clapham sect".

A remote highland parish does not promise much for a stipend to its minister; and so the necessarily "modest income," further reduced, too, by "generosity to a brother," must have had its own straits under the needs of "a family of twelve," of whom Alexander was the eldest. Naturally, then, as we are told, the family "lived a self-contained life of Spartan frugality". In such circumstances, and with little more than an accordant tuition, the young Fraser grew up, as he says himself, "a shy, awkward boy; unobservant of what lay outside some strong individual tastes, physically educated by lonely walks, work in the manse garden or oaring in a boat; and with no outside youthful companionship".

It is precisely as such a boy, too, that he describes himself when in his first session, 1833-4, he entered the Junior Humanity Class at the old College off the High Street of Glasgow. "The publicity," he says, "and social collision of a Glasgow classroom came as a shock to a shy, sensitive boy, emerging for the first time from the lonely manse in Lorne. This, along with inadequate Latin and Greek, habits of desultory reading, and indifferent health in the surroundings of Glasgow, depressed me, and I felt myself a foreigner among my new associates."

Here he remained only a single session. But, "notwithstanding," he says, "I still fondly cherish the memory of college life, in that far-off winter—in quaint dingy courts, on dark winter mornings, as we gathered soon after seven to the sound of the college bell".

And so he, too, with a red gown on his back, must have seen, morning after morning, from the facing street, the twin lamps that just indicated the black devouring maw of the college entrance, as, right and left over its squared sides, they brought ever to the student's mind images of Bitias and Pandarus, supporters of the gate, while he hurried along, even agitated by the very peculiar, small, sharp, quick, quick, of that strangely instant catalogue bell, the stopping of which meant the shutting also of the classroom door and the impossibility of an "*Adsum*" from him belated without to the call of his name within, with loss of the best of a certificate, uninterrupted attendance!

He mentions his Professors, Ramsay and Sandford, with a little more knowledge of them, perhaps, than in a single session he had opportunity to learn. It is characteristic that, philosopher himself, he has most to say of the Moral Philosopher he saw, though such tuition as the latter's in a college curriculum he had yet years to wait for, and, as eventually it proved, elsewhere. This was Prof. James Mylne. It was "him I looked at with most interest," he says: he "was probably, in 1833, the most independent

thinker in the Scottish philosophical Professoriate". Independent he may have been, and "old Mylne" was certainly spoken of in the college courts as something more than usual in his place. But I know not that Destutt Tracy as the authority he set up, and the consequently advocated Sensualism, could have even approached in truth and knowledge Reid and Common Sense. So—as with Stewart and Brown afterwards—we had still a "Philosophy of the Human Mind".

Prof. Fraser mentions only two names as those of fellow-students in the Junior Latin. Alan Ker is one of them—quite an intimate of the other who is gratefully aware of all the honour done him in the welcome terms of the remembrance—and he (Ker) was first prize-man in the Junior Latin of that year, as he was medalist in the senior of the next. He was still in College as late as the Logic Class of 1836-7, but a Barrister in London when, some years later, I climbed up no end of stairs to see him in Lincoln's Inn (I remember he put on his wig for me). Years later, again, he did marry Miss Tennyson; as, finally, years later still, he did die "in high office in Jamaica". The *Biographia* mentions, in connexion with John Macleod Campbell of the famous Row Heresy, the name Alexander Scott. I am inclined to infer from his silence otherwise (he is the Scott mentioned afterwards, however, as candidate for the Edinburgh Logic Chair) that Prof. Fraser was not aware of what Scott was to Ker. This Scott was to us, students of Glasgow, A. J. Scott of Woolwich; and we had an enthusiasm for him, whether as Lecturer or Preacher. As the former we exclaimed with wonder that he was a διδάσκαλος, a διδάσκαλος, a teacher, a teacher indeed! As the latter he awed us into the deepest religious trust and absorption. Scott was the personal friend of Thomas Carlyle; and as principal of Owens College, Manchester, he was known in his proper quality in the end. He had married an aunt of Alan Ker's, and was consequently to him an uncle.

If Alan Ker was still in College when Edmund Lushington came to fill the vacant Chair of Sir D. K. Sandford; and if he heard, in the Inaugural of that most accomplished of Professors, for the first time, as I did, that new and so peculiarly ringing voice, he could never for a moment have had a thought that both Professor that spoke, and student that heard, should have, by-and-by, the pride to be brothers-in-law not only to each other, but to Tennyson himself as the ennobled brother of the brides. By the accident of his brother practising Medicine at Cheltenham it was that all this fell to the lot of Alan. But, as Tennyson's brother-in-law, Ker went to the West Indies, firstly as Puisne Judge to another Island, but eventually as Chief Judge to Jamaica. Had the young Fraser remained longer at Glasgow College than the one session, he might have earlier had, as friends beside him, the later Profs. Sellar and Shairp (not to mention others otherwise notable); as he might have heard, too, Prof. Buchanan calling up, in the Common Hall,

as prizeman, a Tom Taylor, and explaining that "Tom" was no familiarity, but a name genuinely baptismal and full: which Tom Taylor was afterwards the celebrated Tom Taylor of *Punch* and of so many pleasing and successful dramatic pieces.

But the student from Lorne did not return to Glasgow to remain for other sessions at the College there. He went to Edinburgh instead, and from the date 1834-5 onwards, Campbell Fraser was a name more and more to do it honour.

The two first chapters that follow here in reference to life for him in Edinburgh, are of much deeper concern for him than for it. Their substance is really the laying of the foundations of religion and philosophy on the part of the young man himself. The general mind of the city cohered with this: "Chalmers, the most eloquent of Scottish preachers, was at the head of a revived ecclesiastical life, through which Edinburgh was to become the centre of Church and State conflicts and disruptions, of which the final issues are still remote". This, as so characterised, may be referred to again; but, in the meantime, what we have to see is the vital influences it anew set aworking in the young mind which, as from his very first words in his book, conditioned it. We shall quote a few passages here that may prove keys:—

"At the end the world of the senses had receded; the world of living mind appeared to reduce it to subordinate reality. Causes independent of physical nature began to take precedence of the caused causes that depend mechanically upon certain antecedent phenomena. A dualism, partly suggested by Kant, was then coming dimly into view. 'There are two things, as Kant saw, which fill the soul, etc.—the Starry Heaven and the Moral Law. . . . The Moral Law departs from my invisible spiritual Self, and reveals an originating activity that is independent of my animal system, and of the mechanical causation empirically exemplified; and it issues at last in the mystery of teleological instead of mechanical causation in the heart of the universe. It was thus that I was led to reflect upon our conception of the infinity that is latent in all that is real. . . . It was now, too, that I began to see in our Common-Sense or Common Reason a Reservoir which holds for us in a latent state the *rationale* upon which human action and knowledge at last depend, and which it is the work of the philosopher to interpret.'"

If the reader will but complete this extract, he will wonder how Prof. Fraser has been able to construct for himself, ingeniously, out of Kant's Starry Heavens, on the one side, and his Moral Law, on the other, the two contrasting sides of Philosophy. This of Kant is known to everybody, and has been repeated scores of times. It is perhaps strange that those repeating it have never thought of quoting an older passage of Kant on the starry heavens with at least reference to the thinking mind, if not exactly literally to the moral law. Kant's *Natural History and Theory of the Heavens*, as probably now in most hands in the form of, and so assumed to be represented by, Prof. Hastie's translation of that celebrated production

under the title of *Kant's Cosmogony*, may partly, at least in these days, be the cause of this. For, while translating the two former parts of the writing, the late Reverend Professor, apart his class, may be fancied latterly rather to have flattered Physics and so somewhat slighted Metaphysics, and, as it were, in that regard felt disinclined to translate a whole, the Third and concluding, part of a work that Kant had entrusted to the Press as so important that, once for all exceptively for him, he had dedicated it to the King—a work in the general ear of rising importance, and so important, indeed, to Dr. Hastie himself that he is never done exalting it, and has even dedicated it himself, like Kant, to what he holds to be of most illustrious rank in science. Such a work, then, if translated at all, clearly deserved to be translated at full.

But, be that as it may, the passage I refer to occurs in, or can indeed be almost said even to constitute, the very conclusion of the entire work that is so signally in question. I translate it thus :—

"In effect, if we have filled our minds with such thoughts as these, the aspect of the starry heavens on a clear night, awakes in us a joy which only noble souls feel. In the universal calm of nature, and in the peace of sense, the hidden faculty of the immortal spirit speaks to us indescribably, and breathes into us thoughts, which may be felt but not possibly expressed."

This passage, as italicised, in the original, is italicised here.

Thomas Carlyle, when, in the letter to me, that, from Kant's letters, made out Kant "small," he wrote asking me, who it was that called Kant *Zermalmender*, and where it was that the starry skies and moral law passage appeared; might really have been won over to Kant, had I but added to my answer the above quotation from said *Natural History and Theory* book!

Returning to the extracts from the *Biographia* in which it was by the allusion to the stars and the moral law that I was led to speak in that reference further, it is to be said that the passages in example are very far from exhausting the situation concerned; but they will certainly give some insight into the earnestly working mind of this most seriously interested young student. And all may be said to have gathered itself together and summed itself at last, for a time, in his two prize essays, the one on Toleration, and the other on the Infalible Authority of the Bible. The reasoning that constitutes what we may suppose to be the substance of these two writings may be regarded as to some extent reappearing here in brief; and it is really admirable—honestly central, honestly comprehensive, honestly instructive. As that, and no less than that, it must be allowed to be properly and peculiarly valuable. To prepare himself, for example, for the latter essay his industry and sincerity lead him, so to speak, into the very confessional for themselves of all the Churches. He even attends the lectures of the Roman Bishop of Edinburgh in proof; and actually writes him an anonymous letter on his own difficulties: he was checked, he

says, by his (the Bishop's) lectures, and not encouraged "to look for the basis of religious certainty in the fallible hypothesis of an infallible ecclesiastical organisation"; and he is equally candid towards the other Churches—his own, for example, say, of "Books produced long ago in Judea," "What could be said in favour of the infallibility of this collection of revered books, as a substitute for the abandoned infallibility of the living Church?"

The *Biographia* is very full otherwise, as on the many friends, the various positions held, the events experienced, the journeys taken, etc., etc. One would like to name all this so interesting which it has been the lot of Prof. Fraser to meet, enjoy, suffer, or generally in life prove, but for the mere sketch of a review to welcome a work on its first appearance from the Press, this slight paper already grows long. Positively, with the *Biographia* in hand, it is with pain that I realise to myself the very bulk of most interesting material that must be left without a comment. The most momentous public event of Prof. Fraser's whole life in Scotland—the creation of the Free Church, namely—cannot now be adequately referred to, much as it is in evidence throughout the most important chapters of the book. It constitutes the life-excitement of the nation for many years. It was as a whirlwind in the public hall, and it agitated the hearth. It was loud on the streets, and it could almost be heard in the toll of the church bells. As it is said, "Ecclesiastical war had arisen in Scotland. . . . Scotland was in the throes of an ecclesiastical conflict" more and more flushed with every successive year of not much less than ten. Edinburgh, particularly, as we have also just seen it said, "was to become the centre of Church and State conflicts and disruptions—of which the final issues are still remote". Issues! and before what one such issue, do not men, good, the best, even stand now, appalled! This, as we write!

And, for the student from the manse, the son of the manse, how can we expect these years to have made him? For it was they that in very truth, and on the whole, did make him. They were those from 1833 to 1843, from his fourteenth year as a boy to his twenty-fourth as a man. It was these years—as has been said—that gave scope to the full formation of the first principles, the essential forces, that were innate in him—those in a word that concerned "the enigma of the universe". We have already seen extracts from page 59 that illustrate this, and they may be supplemented by many others not less strong that follow. These, in fact, are that in the *Biographia* which is most vitally pregnant for the *Philosophia*. This in the immediate neighbourhood, for example, tells: "At first I was apt to confound uninterpreted with interpreted Common Sense. I was also inclined to ask for logical proof of the trustworthiness of this offered guide." But anything like full quotation is quite out of place here. I must content myself with the few spiculae in that reference already given—I, for my part, have been much struck by the forensic power with which, in

the discussion of main points, religious or philosophical, Prof. Fraser can set side against side, fairly at full, without a *soupc on* of fear or favour for either the one or the other of them. It is in this that I find both a deep-thoughtedness and a power of writing which I have not been slow to speak of elsewhere. In fact with such a gift of forensic argumentation, or say Parliamentary argumentation, I have sometimes wondered that Prof. Fraser was not oftener seen publicly to the front during the Free Kirk storm. But, of course, he had, there and then, an official place where, whether as Editor or Teacher, it was the silent pen that was natural rather than the voice from the platform.

And now, too, there were suggestion of his books; but the suggestion could be righteously redeemed only by books, and never by an article. The excellences which have been spoken of as to be found in the *Biographia* are all to be found in the *Gifford Lectures* also; and these of Prof. Fraser for Locke and Berkeley are the standard editions. Care, accuracy, industry characterise them eminently, and the small *Locke*, the small *Berkeley*, the small *Reid*, are quite charming little volumes and in their dimensions full. What strikes at first, in their case, is the ease with which they are written, and, secondly, the ready obligingness with which the application of the Publishers or their most competent Editor, has been acceded to; for, of course, no one's action precisely there could have been more valuable than his. This, naturally, of the *Berkeley* and even the *Locke*; but, if a Ferrier had lived to do the *Reid* should we have expected the same thoroughness, impartiality,—in a word, objectivity?

The friends we hear of in the *Biographia* are affectionately and discriminately spoken of. Some as teachers claim respect, admiration, reverence. They are such as Chalmers and Hamilton, for example. The former, Chalmers, "atoned," it is said, "for comparative mediocrity of learning by the eloquence and moral fervour with which he delivered magnificent conceptions"; and, no doubt, it is pretty well always in some such words that we have Chalmers described nowadays. Here, for instance, is another admiring old pupil who speaks: "He (Chalmers) woke up to see and feel that the spiritual interest was the sovereign one, and to that he devoted himself body and soul; but he was not much of a scholar or even a theologian". No; it was not in depth or originality that he *thought*; but it was in both—it was both in originality and depth that he *felt*. Another man may owe his will to his intellect; but Chalmers!—Chalmers, on the contrary, owed his intellect to his will. See him stand up in a barn, and fill the barn with Professors, students, ploughmen. Not a Professor there, and not a student there, no, nor yet a ploughman, but as he looks at the man, that living presence, that face almost, as it were, of inspired reality and truth, is caught up by him—is more and more caught up by him, as, at every flash, out and in, of that lightning swift right arm, like a God-compelled piston-rod, the heat accumulates,

till all around, roof, rafters, walls, the hearers, burn—burn round him—him in the midst—who no longer speaks, but is the focus, the centre, that himself—*burns* !

Prof. Fraser enjoyed a close intimacy with Hamilton, and speaks again and again of him, and ever in the highest terms. He “tended,” it seems, “to transform inductive science of mind into ultimate philosophy of the universe”; and mentions as his “an extraordinary accumulation of Greek and mediæval as well as German erudition”. Hamilton, it is even said, “was perhaps the most learned Scot that ever lived”. That is certainly true: Hamilton’s learning is attested by the presence everywhere in his pages of all the great names, ancient or modern—mediæval, too, even to the minutest, the strangest and the most unknown. True, Thomas himself can be quoted—is quoted (in *Memoir* by Veitch, pp. 120-128) with an error or two—largely in honestest praise of Hamilton, a praise that is liberally extended to face, figure, and personal charm, as well as, implicatedly, to his “swimming and other ruggedly athletic prowesses”. Hamilton had all the precision, the exactitude of genius, literary genius. He had, like Chalmers, too, the decisive peremptoriness which there was no man to question: but it was of another order, and from a very different centre.

No doubt Prof. Fraser is the naturalised free man of the whole domain of philosophy; but perhaps we hardly need fear blame if we venture to associate his name with that of Berkeley. All through the now numerous and not exiguous volumes of his works there is ample testimony to no less a union. Especially we may point to the last and concluding chapter of the whole book for evidence to this effect. Throughout his whole career Prof. Fraser has never ceased in his deep-thoughted way to meditate, and in his own powerful style to write, on the philosophy of Berkeley. The Berkeley proposition is no longer the same in the hands of Fraser that it was in the hands of Berkeley. Unlike Ferrier, who, amusingly, just petulantly, *would not have* the odious word “subjective” applied to his idealism, Fraser’s one labour has been to make what was subjective objective, to transform a crab on the shore into the Cancer in the sky.

It is only appropriately that Prof. Fraser dedicates his *Biographia* lovingly to his wife, the true companion of so many, and, necessarily, not a few arduous, years, of single-minded sympathy and trustful affection.

Altogether Prof. Fraser is to be congratulated on this so unpretentious autobiography of his, as yielding so pleasing a vista of a calm successful career, whether as thinker and writer, on the one hand, or as thinker and teacher, on the other.

JAMES HUTCHISON STIRLING.

Revue de Métaphysique et de Morale. Numéro spécialement consacré au centenaire de la mort de Kant, 12e Année, No. 3, Mai 1904, pp. 279-620.

THIS double Number of the *Revue de Métaphysique et de Morale*, which consists of some seventeen articles, contributed by French, German, Italian and English scholars, and exclusively devoted to the Critical philosophy, forms a splendid memorial of the centenary of Kant's death. It also contains a beautiful heliograph reproduction of a medallion of Kant by Mdle. Standinger, which seems to be a close copy of the portrait so strangely discovered in Dresden in 1896. The *Revue* opens with a weighty and eloquent article by Natorp—"A la mémoire de Kant". Through Kant the German people first revealed a special talent for abstract speculation. When Leibniz had tried to define the national genius, he described its vocation as lying in the sphere of the concrete technical arts, and cited as confirmation the capacity of the German language for expressing the sensible and concrete. The Germans have certainly shown excellent aptitude for the practical organisation of life, but no one, reflecting on the great line of metaphysical thinkers from Kant to Hegel, and having in view the creation by German genius of modern music, the least material of all the arts, would now think of thus describing the national spirit. Kant, Natorp contends, carried into the domain of systematic philosophy the freshness and depth of spiritual insight which were so clearly manifested by the early German mystics, and which are characteristic features of German literature and art. That the great wave of thought which Kant set in movement has given a speculative cast to the national mind is shown, Natorp further contends, by the philosophical spirit which the German language now reveals, and which, as Leibniz so justly remarked, had not previously existed: "Et ainsi notre peuple tout entier ne le fête pas seulement parce qu'il est un Allemand qui a vécu parmi les Allemands, mais parce que la nation allemande a véritablement vécu en lui" (p. 282). Kant's philosophy is the philosophy of what the Germans call *Kultur*, of civilisation in the fullest sense of the word, and has taught the modern world to realise that the furtherance of this *vie d'or*, in which science, art, the moral and religious life, must each play their essential part, is the true object of philosophical reflexion.

The very brief article which follows—"Pour le centenaire de la mort de Kant"—is an extract from the preface to the fourth edition of Paulsen's *Kant*. It gives a suggestive summary of the main features of the Critical philosophy.

There are three articles which deal with the Transcendental Æsthetic. Cantoni ("L'apriorité de l'espace") seeks to separate what is true in Kant's view of space from false psychological assumptions. Drawing a distinction between the logical and the psychological *a priori*, he argues that though our notion of space is gradually formed through tactual, visual and motor experience, yet once

developed it must be recognised as logically *a priori*. This interpretation involves restatement of Kant's proof of the subjectivity of space, and also implies that understanding plays an essential part in its construction. Couturat's contribution—"La philosophie des mathématiques de Kant"—is much the weightiest and most important article in the issue. It is distinguished by remarkable fulness of knowledge both of mathematical method and of the whole body of Kant's writings relative to mathematics, and subjects Kant's fundamental positions in the Transcendental *Æsthetic* and in the section on Schematism to a very searching criticism. As the article is full of detail, I cannot do more than indicate in the most summary manner the main line of the argument. Couturat regards Kant's proof of the synthetic intuitive nature of mathematical judgments as resting on the gratuitous assumptions of the traditional logic. All judgments are not judgments of predication, nor consequently are complex concepts mere compounds of partial concepts. From the representation of the signs, 7, +, 5, we cannot derive the idea 12; but if we think 7 units and 5 units as united in a single number (and that is the meaning of the symbol +) we necessarily think the number 12. Kant, of course, replies by a distinction between combination and arithmetical addition. This combination of the two groups is not obtained by uniting in thought two partial concepts, as animal and reasonable, for instance, are combined in the total concept, man; but is a process of addition, and as such executes itself in and through intuition. This distinction is, Couturat agrees, just, but does not establish Kant's contention. The subject is not '7 and 5' but ' $7 + 5$ '; and Kant begs the question in assuming that the only possible mode of combining concepts is that of external union. The concepts of numbers cannot be defined *per genus et differentiam*, nor decomposed into logical factors, and just as little can they be combined by any method formulated in the classical logic. The conclusion to be drawn is not, however, that they are therefore synthetic, and must rest on intuition, but that the logic of predication requires to be supplemented by the modern 'logic of relations'. Number is not a schema, with an intuitive content: it is not successive enumeration, but is purely conceptual, consisting in simultaneous apprehension.

Couturat proceeds to criticise on similar lines Kant's treatment of geometrical reasoning. Geometrical demonstrations are all analytical, and the whole body of the science can be directly deduced from some twenty postulates. Couturat accordingly quotes with approval the statement of Mr. Russell, that what has ruined the Kantian philosophy of mathematics is not the non-Euclidean geometry, for that, as Couturat maintains, is quite in harmony with Kant's treatment of Euclidean space as a subjective form of intuition, but the logical reconstruction of Analysis. "La mathématique n'est pas liée à une nature particulière d'objets, mais est une méthode générale de démonstration et d'invention. C'est

précisément Boole qui a le premier 'réalisé' cette idée, et l'a formulée dans cette phrase lapidaire; 'Il n'est pas de l'essence des mathématiques de s'occuper des idées de nombre et de quantité'. Aussi l'on a pu dire, sans trop de paradoxe, que la mathématique pure a été découverte par Boole. Et puisque nous célébrons des anniversaires, il nous sera permis de remarquer que le centenaire de la mort de Kant est le cinquantenaire de la mathématique pure; ce qui excuse suffisamment de n'avoir pas connu celle-ci" (p. 381).

Couturat also gives a brief criticism of Kant's treatment of the antinomies. As readers of his *L'Infini mathématique* are aware, he regards the notion of an actual infinite as perfectly consistent; and it is from this point of view that he attacks Kant's position. "On peut donc dire que Kant introduit lui-même dans la notion d'infini la contradiction qu'il croit y découvrir. . . . Dans tous les cas, les antinomies procèdent, non des notions propres de l'espace et du temps, mais uniquement de la notion de l'infini qu'on leur applique" (p. 378). This contradictory conception of the infinite is due to Kant's arbitrary introduction of the notion of time into number and magnitude, and therefore forms an indirect refutation of his conception of mathematical science. The following is Couturat's final conclusion: "En résumé, les progrès de la Logique et de la Mathématique au xixe siècle ont infirmé la théorie kantienne et donné raison à Leibniz. Si Kant séparait et opposait entre elles la Logique et la Mathématique, c'est qu'il avait une idée trop étroite de l'une et de l'autre (p. 379). . . . Loin donc de reprocher à Kant d'avoir été trop mathématicien et trop logicien, nous lui reprocherions au contraire de ne pas l'avoir été assez, en un mot de n'avoir pas été assez rationaliste" (p. 382).

Couturat's article thus forms a valuable supplement to Mr. Russell's criticisms of Kant in his *Principles of Mathematics*. Both claim that these criticisms have been thoroughly confirmed by the recent developments of symbolic logic and of pure mathematics, and constitute 'a final and irrevocable refutation'. Possibly, however, this recent development of mathematical science may be capable of being otherwise interpreted; and I may therefore venture to state one objection that is suggested by the above line of argument. Couturat brings the discussion, so far as it regards Kant, to a very clear issue. Since few will care to deny that the traditional logic, with which alone Kant was acquainted, requires to be supplemented, the question to be decided is whether a 'logic of relations' can altogether dispense with the factual element of intuition. Much, however, will turn on the meaning given to intuition; and it must not be assumed, as Couturat seems to do, that it is purely sensible. As he himself observes, though only cursorily in a note (p. 367, cf. p. 354), Kant in the *Analytic*, following his usual *Krebstgang* method, revises the results of the *Ästhetik*, and shows that even in the apprehension of space and time understanding plays an essential part. Couturat, it is perhaps

possible to contend, does not sufficiently allow for this, and interprets much too literally Kant's earlier statements.

The next article, that of Milhaud, forms an excellent sequel to the preceding. It defines Kant's attitude towards mathematics, dwelling on the grounds, personal and historical, of his intuitional theory, and tracing the development of his views on this point. Milhaud also very justly emphasises the influence exercised by Kant's view of space and time, as formulated in the *Dissertation*, on the formation of his Critical idealism.

Hannequin, who treats of the Principles of Pure Understanding, shows himself a somewhat uncompromising follower of Kant. The *Grundsätze* he regards as thoroughly satisfactory, and as confirmed by the most recent results of physical science. If science is not to be a mere play with arbitrary hypotheses, and scientific truth a meaningless word, the understanding must be able thus to determine *a priori* the formal conditions, and the essential limits, of its procedure. The fixed nature of these fundamental principles, far from preventing, directs and inspires the continuous development of science. "Les 'analogies de l'expérience' sont remarquables par la sûreté et la solidité d'une construction spéculative qui n'a reçu des développements historiques de la science que des confirmations" (p. 415). Unfortunately Hannequin avoids raising the question which chiefly interests the student of Kant, how far Kant's proofs of the Analogies (as distinguished from the mere formulation of them) can be regarded as really satisfactory.

V. Basch's discussion of the use which Kant makes of the faculty of imagination in his theory of knowledge hardly faces the difficulties involved. Imagination, he says, is for Kant the 'guide and interpreter' of the understanding. There is difficulty in seeing how this statement can have any real meaning when the final conclusion reached is that imagination and understanding are two forms of the same faculty, in the one case working unconsciously, and in the other consciously. That conclusion is, at least as regards the constructive imagination, obvious to every student of Kant. The real difficulties—and of such there are plenty—arise after it has been recognised. Kant's empirical imagination would seem to correspond to association, and to imply an orderliness in the given sensations such as is entirely ignored in his constantly repeated description of the data of sense as a mere manifold.

I need only mention Eucken's eloquent article—"L'âme telle que Kant l'a dépeinte"—and pass to that of B. Erdmann. In a very closely argued paper—"La critique kantienne de la connaissance comme synthèse du rationalisme et de l'empirisme"—Erdmann raises in a very suggestive form some of the most difficult problems of the *Critique of Pure Reason*. Kant's chief disciples, especially Fichte, interpreted Kant's later works in accordance with the results of the *Critique of Pure Reason*, and the latter in the light of the apparent idealism of the first edition; and so came to the conclusion that though the conception of the thing-in-itself, the

transcendental object, is a problem necessarily involved in the limitation of our knowledge to sense-experience, it can receive no determinate answer. We can neither say that the thing-in-itself is possible nor that it is impossible. Erdmann proceeds to show that this interpretation is fundamentally erroneous. Kant's real view is that the concepts of pure understanding enable us to apprehend things as they are in themselves. And since every category is applicable to them, they may legitimately be conceived, not only as existing, but also as causes producing in us, by an intelligible causation, the given impressions of sense. "Kant postule donc, par suite de ce qui précède, non seulement l'existence d'une pluralité de choses, en général, comme choses en soi qui agissent sur nos sens, mais il est évident aussi pour lui, que nous pouvons et devons penser ces choses en soi par l'entendement pur, et que nous les pensons par l'entendement pur comme elles sont en soi. Kant, à ce point de vue, ne se place pas seulement sur le terrain du rationalisme leibnizien, mais il adhère à la vieille conviction rationaliste (au sens élargi), qui remonte jusqu'aux débuts de la pensée grecque. . . . Kant est d'après les *principes* de sa *Critique de la Raison pure* un rationaliste métaphysicien" (p. 458). What, according to Erdmann, primarily distinguishes Kant from his predecessors is his fundamental distinction between thinking and knowing. He was the first to raise the problems involved in the explanation of sense-experience. The critical problem, how *a priori* concepts can relate to objects, really means, how can *a priori* concepts through which we think things-in-themselves enable us to know the sensible objects of the phenomenal world. In answering that question, Kant definitely breaks with the rationalism of his predecessors, and transforms Leibniz's logical distinction between sense and understanding into a distinction of kind. If we can only know the objects which the understanding thinks, when they are given us in intuition, it is a fact of primary importance, one which rationalists had ignored instead of emphasising, that *all* our intuitions are sensible. For there follows from this the all-important conclusion, that the categories, the conceptions of things in themselves, have no other application in the knowledge of things, than their application to the objects of experience, that is to say, to phenomena. Though the categories are conceptions of things in themselves, they are fruitful only as conditioning our sense-experience. And thus, without giving up his rationalistic premises, Kant arrives at practically the same delimitation of knowledge as Hume reaches by way of empiricism. Erdmann concludes by indicating how Kant's argument in the *Critique of Practical Reason* may be interpreted from this point of view. I may offer one criticism. Erdmann's use of the term 'categories' is somewhat confusing. Riehl's view that the categories, in their distinction from the logical forms of thought, involve a reference to space and time, and therefore are really identical with the schemata (the latter being simply delayed definitions of the categories), seems to me

to afford a clearer statement of Kant's position. The principle of causality, involving the notion of temporal succession, is only applicable to sensible phenomena. We must think things-in-themselves not as the *causes* of our sensations, but only as their ultimate *ground*, thus leaving completely undefined the relation in which our sensations stand to them. Similarly things-in-themselves are not to be thought as substances—for substance is only conceivable as a permanent in space, and ultimately as material—but more indefinitely as subjects to which unknown predicates belong.

English students of Kant are worthily represented by Mr. Blunt, who gives a very convincing statement and defence of Kant's Refutation of Idealism. The expression 'ausser mir,' to which so much objection has been taken, is thus commented on: "Cette expression ambiguë 'en dehors de moi,' qui se présente au cours de la Réfutation, est une allusion évidente à la notion cartésienne du 'monde extérieur'. Kant est innocent de l'erreur qu'on lui a reprochée: par 'en dehors de moi,' il ne veut pas dire 'en dehors de mon corps'. Le monde extérieur en question est spatial, mais il comprend mon corps. Notre espace n'est pas seulement 'en dehors pour' ma conscience, il est 'en dehors d'elle,' en ce sens qu'il ne rentre pas dans le moi objectif, comme constituant une des psychoses qui en sont le contenu, et par suite est indépendant de son ordre temporel à une dimension" (p. 484). Or as Mr. Blunt says in another connection, things in space are "'extérieur' à moi en ce sens qu'il est indépendant de mes *psychoses* individuelles, celles-ci étant déterminées par rapport à lui et non pas inversement" (p. 483). The justification for this lies in Kant's view that, though the understanding makes nature, "ce n'est pas mon entendement en tant qu'individuel, c'est la structure mentale normale chez moi et mes semblables, qui imprime au donné ses formes et ses catégories; l'expérience ainsi organisée se réfléchit alors, d'une manière plus ou moins adéquate, dans mes perceptions individuelles" (p. 484). This conception of space and the categories as immanent in the phenomenal world 'external to' the individual raises, however, all the main difficulties of the *Critique*; and Mr. Blunt concludes by indicating what he regards as satisfactory, and what is unproved, in Kant's argument.

There are three articles upon Kant's ethical views. Those of Fouillée and Boutroux may be taken as representing the two sides of the truth. For while the former makes a vigorous, and somewhat damaging, attack upon Kant's theory, the latter gives a charmingly sympathetic account of its main features, insisting on their value for present-day thinking. Th. Ruysen's article—"Kant est-il pessimiste?"—is a reply to Hartmann, who has claimed Kant as the father of modern pessimism. Ruysen has no great difficulty in showing that Kant's 'Christian pessimism' does not exclude a genuine moral optimism. Our duty traces out for us the goal of our hopes, and, as Kant also believes, history confirms their legitimacy.

It is disappointing to find only one article devoted to the *Critique of Judgment*, and that a very slight contribution of seven pages. M. Delbos brings out, however, in a very clear and concise manner, the harmonising tendency which gives unity to the extraordinarily rich and varied contents of this *Critique*. "Venue après les deux autres Critiques qui définissaient en formules objectives, l'une les conditions de la certitude scientifique, l'autre le principe de la morale, elle en est comme la 'synthèse subjective,' par laquelle se consacre sans doute une fois de plus l'impuissance de l'esprit humain à déterminer intellectuellement l'absolu, mais aussi sa suffisante capacité de concevoir dans un ordre harmonieux, selon une hiérarchie régulière, tout ce qui théoriquement lui est accessible et tout ce qui pratiquement l'intéresse" (p. 558).

H. Delacroix writes on "Kant et Swedenborg," and Riehl on "Helmholtz et Kant". Both, especially the latter, contain much interesting matter. The concluding article by D. Parodi is on Renouvier's criticism of the Kantian categories.

NORMAN SMITH.

A History of European Thought in the Nineteenth Century. By JOHN THEODORE MERZ. Vol. II. Edinburgh: W. Blackwood & Sons, 1903. Pp. xiii, 807.

THERE was a time, not so long ago, when the purely scientific man scoffed at the philosopher, and when the latter looked down from his mystic heights on the plodder after material facts. In those days we fancy most philosophers accepted the Baconian as the true scientific method, on which there never had been and never could be any improvement. On the contrary, scientific thought has developed through the ages by an interplay of imagination and knowledge.—speculation, hypothesis, theory, suggesting in ninety-nine cases out of a hundred the line of experimental research. Galvani's discovery was perhaps a happy accident; but Volta's development of it physically was a reasoned thing. Oerstedt, imagining that a wire heated by a current might have some effect on a magnet, discovered the magnetic character of the electric current. Occasionally no doubt, as in the discovery of the Röntgen Rays and Radio-activity, the facts discovered were new and bore no distinct relation to the momentary views or desires of the discoverer. But it remains unchallengeable that nearly all the great epoch-making advances of the nineteenth century have been effected by minds revelling in speculation.

All this is well brought out in the second volume of John Theodore Merz's *History of European Thought in the Nineteenth Century*. The opening chapter (Chapter vi.) on the kinetic or mechanical view of nature traces the growth of the conception of the ether as a necessity in physical theory. The strenuous

attempts to supply if possible a dynamic basis to Fresnel's grand theory led to the mathematical development of the kinetics of vibratory motion; and out of this grew the recognition of the pregnant principles of isochronism and resonance. The principles are referred to by Mr. Merz; but we do not know of any popular writer who has dwelt upon their importance. Next to the all-embracing doctrine of Energy there is perhaps no principle so fundamental and so far reaching as that of resonance. Borrowed from the department of Acoustics the word and especially the idea enter intimately into the discussion of the interplay of vibrating systems. If there be any truth in atomic graininess of matter the familiar phenomena of reflexion and refraction of light are the result of resonance. Emission and absorption of radiant energy in all its forms—actinic, luminous, thermal, electric—illustrate the same great principle, which indeed strikes deep down into the very constitution of the atom. Maxwell in his clever rhythmic account of the Lucretian atom writes:—

So treading a path all untrod the poet-philosopher sings
Of the seeds of the mighty world—the first-beginnings of things.
How freely he scatters his atoms before the beginnings of years;
How he clothes them with force as a garment, those small incompressible
spheres!

But the modern physical atomist has broken loose from Lucretian moorings. The material atom is now a minute cosmos, a whirling vortex of countless corpuscles forming stable systems like Saturn's rings of satellites. When a periodic disturbance agitates one of these microcosms, energy is absorbed in greater and greater measure the more nearly the period of the disturbance approximates to a natural period of vibration of the system. This is the principle of resonance, which lies dynamically at the basis of dispersion, normal and anomalous, of fluorescence, of phosphorescence, and of spectrum analysis. The historic development of the notions underlying the theory of exchanges is well expounded by Mr. Merz, although we think that Balfour Stewart deserves in this connexion a higher place than a passing mention in a footnote. Nevertheless the footnotes, which abound in quotations from authorities, form one of the most valuable features in the book, showing how widely the author has read and with what care he has striven after catholicity and accuracy.

Closely connected with the kinetic view of nature is the Statistical View, to which the whole of Chapter xii. is devoted. It came strongly to the front in the development of the kinetic theory of gases; and to Maxwell especially is due the general discussion of its importance in physical phenomena. For not only does the principle enter into the kinetic theory of matter, but it is of fundamental importance in all sense sensations. Whatever be our ultimate view of existence, sensations are after all the facts we have to deal with. Now the eye does not see by means of a

single impulse, but in virtue of a train of waves. All we know directly is the *average* effect of a myriad of these. Not only is there a *time* average of impulses but there is a *space* average over the surface of the real receiving organ. The apparently steadiest things are so statistically. The probability is that the evidence of our senses, direct and indirect—and we have no other “material” to guide our thoughts—bears as little resemblance to the physical reality as the printed word does to the idea it embodies. This view of the interpretation of nature has been gradually forced upon the scientific mind during the last century; and it is here where the “mental” and “natural” philosophers find common ground. Corresponding to this view the connotation of the familiar phrase “a Law of Nature” has changed fundamentally, at least to thinking minds.

In Chapter vii. Mr. Merz gives an admirable account of the development of the doctrine of Energy and of Electrical theory, leading up to the modern electron or electric atom theory, which may now be regarded as having established itself as a working hypothesis of great suggestiveness. The philosophical importance of this trend in physical thought is referred to at the close, and a further discussion promised. This will be looked forward to with interest. For there is something uncanny in the thought that the physical view of nature is built upon the “shifting sands” of whirling and streaming electrons with the aid of a mathematical scaffolding admittedly imperfect.

This at once leads to the question as to the validity of our mathematical methods; and if one portion of Mr. Merz's second volume is more worthy of praise than another it is the last chapter on the development of mathematical thought. We are not aware that Mr. Merz would regard himself as a mathematician; but only a man with mathematical faculties could have written such a clear account of the recent progress in mathematical thought as we find presented here. The complex variable, descriptive and projective geometry, the principles of continuity, duality, and reciprocity, the theory of numbers, of forms, of operations, of groups, hyper-space and non-Euclidean geometry, are among the subjects treated. It almost seems as if there were a power outside of himself forcing the mathematician to introduce conceptions essentially foreign to the axioms on which his science is based. For example in ordinary algebra we early learn that, as a necessary logical consequence of the original definitions of $+$ and $-$, the product of two negative quantities is itself positive. Hence there cannot be any quantity which multiplied by itself gives a negative square. Yet one of the simplest of quadratic equations compelled the introduction of the unreal, the imaginary, the impossible square root of -1 . From the arithmetical point of view $\sqrt{-1}$ is an absurdity. It is meaningless as a quantity. But it soon appeared that it could be interpreted as an operation effecting a change of direction. Moreover as a symbol in analysis $\sqrt{-1}$ became all important, leading

immediately to a complete symmetrical theory of equations and algebraic functions, and greatly facilitating the solution of problems in applied mathematics. In fact the complex number, originally introduced tentatively and apologetically, now rules the whole realm of algebra. Even yet, in spite of the infinite value of the thing, no satisfactory philosophical ground can be given for its introduction. Why should a science based on the principle of representing things by symbols require the introduction of a symbol which corresponds to no thing? We can no doubt find intellectual satisfaction in extending our algebraic and originally arithmetical processes to operations; but as we do so we are compelled to modify these very processes. Multiplication, for example, becomes what might be called polar, the value of a product depending on the order of the factors. By such imposed limitations we enrich the significance of a process and extend our methods.

We can but refer to the wide-reaching inquiry into the foundations of geometry, an inquiry which has led to the conception of different kinds of space each with its own consistent though to us unimaginable system of geometry. In the effort after a rigorous foundation of geometry, the mathematical mind has, in short, demonstrated the *possibility* of a kind of space whose properties it is incapable of imagining. The unthinkable and the impossible are not convertible terms.

It is not possible to do more than touch upon the many phases of thought brought forward in Mr. Merz's pages. The difficulty in undertaking a history of scientific thought is to decide what to leave out. Certain broad issues are obvious to every one, such as the doctrine of energy and thermodynamics, the electromagnetic theory of light, the relation of ether and matter; but, in the discussion of these, secondary questions arise in the sifting of which judgment must be exercised. And in this respect Mr. Merz's history is worthy of our highest appreciation. As already pointed out we think the author has excelled himself in the presentation of the modern trends of mathematical thought. All men with any claims to intellectual power know a good deal about energy, electric waves, natural selection, and variation; but to the vast majority projective geometry and function theory are absolutely unknown, "number" suggests no deep philosophical discussion, and "space of four dimensions" is the one hyper-spacial phrase possessing any familiarity. Mr. Merz has done a great service by giving the intelligent reader who has had no training in the higher mathematics an opportunity of becoming familiar with the subtle searchings of some of our keenest intellects.

C. G. KNOTT.

BIOLOGICAL SECTION.

In passing from the mechanical and physical views of nature to what may be roughly called 'biological' views, Merz emphasises

the contrast between the abstract study of natural objects and phenomena—a study which introduces us to “the general relations or laws which govern everything that is or can be real,”—and ‘those sciences which study the actually existing forms as distinguished from the possible ones, the “here” and “there,” the “where” and “how,” of things and processes; which look upon real things not as examples of the general and universal, but as alone possessed of that mysterious something which distinguishes the real and actual from the possible and artificial’. This contrast between abstract and descriptive sciences raises the difficulty that in pursuing the latter, especially in their kinetic or physiological aspects, the investigator finds himself ‘abstracting’ just as the chemist and physicist did. Furthermore, the contrast leads the author to an extension of the concepts of the ‘morphological,’ the ‘genetic’ and the ‘vitalistic’ views in a manner which may surprise the morphologist, the genealogist, and the physiologist as they actually exist. For it follows from the classification adopted that the morphologist, for instance, has crystals and minerals, why not also mountain-ranges and river-courses, within his province. To this he may object that what he took to do with was the study of the static relations of *organisms*, that, illogical as it may be, he does not find a long lost brother in the crystallographer or the mineralogist, and that the history of scientific thought in regard to the morphology of organisms must not be mixed up with the doubtless analogous study of the morphology of mineral forms or mountain-ranges, which involve quite different methods and disciplines. On the other hand, we may recall Huxley’s confession that he was not really so much interested in the fact that the animals he so skilfully anatomised were once alive, as in the general problem of their structural ‘make up’; he was, he said, an engineer *in partibus infidelium*. There is much to be said on both sides.

The author points out, that “one of the greatest changes which the present age has witnessed has been the breaking down of the old landmarks and of the stereotyped divisions (between the sciences) which existed in the beginning and all through the first half of the (nineteenth) century”; and thus he feels a somewhat slack interest in the much-discussed problem of the classification of the sciences, as detailed, for instance, in Prof. Flint’s recent erudite treatise.

“In the perpetual variety of change the morphological view tries to define those recurring forms or types which present themselves again and again, towards which all changes seem to revert; thus bringing some order into what would otherwise be disorder and confusion.” “On the other side, the genetic view deals with the transition from one form to another in the course of time; takes more interest in movement and in the process and function; and seeks for their probable laws and regularities.” This introduction to the morphological view of nature is admirably put, but the

historical difficulty remains that the logical distinctions are not, in point of fact, always applicable to the work of the masters who have made our sciences of organisms what they are. Gegenbaur, for instance, perhaps the most illustrious comparative anatomist of the second half of the nineteenth century, was conspicuously a pure morphologist, and yet his whole work—though he seldom said a word about evolution, is pervaded by the genetic idea. A descriptive anatomist, of course he was, and we have not his equal now, but his whole morphology was evolutionist.

Of this difficulty Merz is well aware, and his chapter shows in an interesting way that many of the paths of investigation followed by the morphologists led them into new atmosphere and disclosed horizons much wider than they had dreamed of. Thus there were explorations in the graveyards of the buried past and excursions to far off lands; forms were studied *in situ* and living things visited in their habitats; the microscope revealed the innermost structure of organisms and an enormous creation of minute beings invisible to the living lens by itself; the study of life-stages began to fascinate and morphology became morphogenesis; the great architectural plans on which living creatures are constructed began to stand out clearly, the relatedness and apparent recurrence of definite types could not but arrest attention, and although 'the relationship was mostly looked upon as ideal, not real,' there were isolated morphologists before 1859 who were not ashamed to call themselves genealogists. Prof. Patrick Geddes, with his usual illuminating insight, has pointed out that the progress of morphology as such—from Buffon to Bütschli—is a story of more and more deeply penetrating analysis, from the external form and symmetry of the organism to the internal architecture of the organs, from the organs to the tissues which compose them, from tissues to their elementary units or cells, and from cells to the living matter itself. This summary gives a crispness to the historical retrospect, of which Merz might, we think, have taken more advantage but it must be remembered throughout that he is dealing not with the history of science but with the history of scientific thought, and that the mood or logic of the morphological analyst is the same whether he is studying an elephant or a Bacterium, a fossil or an embryo, a liver or a nuclear complexity of one of its cells. In passing, we doubt the wisdom of speaking of the period 1800-1860 as dominantly morphological; the genealogical and physiological disciplines were often prominent during these decades, and morphology was never stronger than it is to-day.

There is no finer chapter in the book than the ninth which deals with 'the genetic view of nature,'—the view which seeks to give answer to the question, How have things come to be what they are? To Leibnitz with his 'Protogæa,' to Kant (influenced by the cosmical theories of Thomas Wright of Durham) with his 'Natural History of the Heavens,' to Laplace, forty years after

Kant, with his 'nebular hypothesis,' important initiative stimuli are due, but their attempts 'belong to the Romance of Science'. More solid contributions to a real genetic theory of the things of nature are to be found in the researches in palæontology and embryology which are associated with the names of Hutton and Lyell, Wolff and von Baer. Thence, after a glance at Oken and his 'Natur-Philosophie,' the author reaches the pioneers of Evolutionism, such as Lamarck and Treviranus, and finally brings us to familiar ground in the work of Darwin and Wallace, Haeckel and Spencer. The story has been often told, but never better, for the author's unusually broad outlook enables him to give due place to the many collateral influences, *e.g.*, from physics and chemistry, which helped the doctrine of organic evolution to win conviction as a modal formula for the universal "Werden and Vergehen". In reference to this chapter we may call attention to the appreciation of the interesting and unique position which Karl Ernst von Baer occupies in the history of science and thought.

"It is from and through organisms, the living things of nature, that we first learnt to look upon the whole of nature as having a history and a life. Imperceptibly we have been led to study life, the genesis of things, on the large scale and in the abstract, and in so doing have lost sight of the life which goes on around and near us. Both the morphological and the genetic views of nature started with a biological interest, but have gradually lost sight of it." Such considerations lead the author to 'the vitalistic view of nature' which inquires into the actual processes of life, though still without any secure convictions as to what 'life' is. As was to be expected, much of his physiological chapter is concerned with the see-saw of the two schools of so-called materialists and so-called vitalists. "After the age of Bichât, and largely through his influence,—*i.e.*, through the cultivation of anatomical researches,—the pendulum swung in the direction of proving more and more the parallelism of organic and inorganic processes. It reached its maximum swing in that direction about the second third of the century. Since then it appears to have again returned in the opposite direction." It is this movement which the author follows with particular care, showing that "the stronghold in which the innermost secret of life is intrenched has been attacked from all sides by all the processes and methods of the mechanical, physical, and chemical sciences, and how it has persistently refused to surrender". The chapter discusses the influence of Lavoisier, who applied the theory of combustion to living creatures; of Liebig, who popularised the conceptions of "Stoffwechsel" (metabolism) and "Kreislauf des Lebens" (the circulation of matter), and was one of the first to look upon nature as an economy or a household; of Claude Bernard and Johannes Müller, of Lotze and Du Bois Raymond, and of many others. Finally, through Virchow and others, we are led to the idea of the continuity of generations,—a continuity of organisation and of metabolic processes—and

thence to Weismannism and the all-embracing dynamic outlook on organic nature which this implies.

Pausing in his fascinating history, the author asks if we have come nearer an answer to the question, What is Life? "At one time, for a generation, which is passing away, we apparently had. But a closer scrutiny has convinced most of us that we have not." We are far from being able to translate into mechanical categories the organisation, the metabolism, the adaptation, the selection, and similar formulæ with which we work. "The spectre of a vital principle still lurks behind all our terms." And this leads the author naturally to his chapter on the psycho-physical view of nature, which has to do with the mental, inner, or self-conscious side of the higher forms of living matter, and discloses a new world within the old one, the microcosm in the macrocosm. This will obviously lead on to the third volume, dealing with philosophic thought in the nineteenth century. The twelfth chapter discusses the application of statistical methods to such phenomena as those of variation and heredity—a profoundly interesting and important subject, but we should not have thought that it was worthy of being dignified as 'the statistical view of nature'. It is only the application of a special technical method, and promiseful as its results have been it does not appear to us a new point of view.

There are, the author says, two grand and complementary conceptions which either underlie all scientific inquiry or result from it,—*Order* and *Unity* (in its most impressive form, *Individuality*). He finds these two conceptions dominant in Biology as also in Physics. "The sciences of life have forced upon us more and more the conception not only of orderly arrangement but also of a unifying principle—that is, *Individuality*." The concept of Order is not merely static, it is progressive, and it leads the scientific mind through the idea of continuity to that of Unity. In other words, the biological concepts of Order and of Unity combine in a concept of Evolution.

As we have given much attention to the history of Biology, since the time of Buffon, we may be permitted to record our appreciation of that part of Merz's volume which deals with the development of biological thinking. The author's erudition is marvellous, yet amidst the trees he never loses sight of the wood. Unembarrassed by his wealth of material from original sources he advances serenely and sanely, disclosing step by step the magistral march of scientific progress. His general ideas are so akin to our own that we naturally find them hard to criticise, and his historical sketch is so much more comprehensive and consequent than that to which we attained that we cannot do more than express our grateful admiration. There are many students—of science, philosophy, and history—who wish and need to know what the trend of biological science has been during the past century. They will find this and much more in the relevant chapters of this remarkable work, which it would be faint praise to call "Whewell up to date".

J. ARTHUR THOMSON.

Autobiography. By ALEXANDER BAIN, LL.D., Professor of Logic and English, University of Aberdeen. (With Supplementary Chapter.) With Portraits. London: Longmans, Green & Co., 1904. Pp. xii, 449.

THE Experiential Philosophy, in its British phase, now reckons among its historical documents three autobiographies by three representative men,—J. S. Mill, Spencer, Bain. As one naturally thinks of the three men together, so one naturally compares the features of their autobiographies. Each book is an original contribution to the history of a moment in philosophical history. Each book is as individual as its author. What we had inferred from the other writings is now laid bare authentically to us here,—sometimes to our gratification, sometimes to our disappointment, always for our acceptance as that which the writer chose to give us. And the motives that impelled to the writing of these self-records seem to have been of the most various kind. But surely in none of the three cases was the expression of any motive needed or expected. That Mill or Spencer or Bain should have thought it worth while to write, were in itself enough. An apology is superfluous. Without these three books we should be at least ethically, if not intellectually, poorer. Yet in estimating the quality of the results, we must have regard to the professed motive for writing. Here I am concerned only with Bain, who in his Prefatory Note sets forth with his known precision not only his reasons for writing, but also certain fundamental principles that might serve for every man important enough to deserve an autobiography.

To acknowledge indebtedness, to indicate the stages of mental growth, to reflect and cast light upon his surroundings, to present a critical and consecutive view of his writings, to give a chronology for such after record as may be desired and for easier reference now,—these were his objects in writing. And they are adequate. In carrying them out, Bain is simple, sincere, unemotional, severely objective, non-egotistical. He was concerned to state the essentials of his intellectual growth, not to paint an interesting literary portrait. Those accustomed to the high colour of the popular autobiography will be occasionally repelled by the coldly critical record of fact. But every fact is a contribution to a great life history. And if the words themselves are unemotional, the wide range of experience they indicate are proof of a long life full of living interests. It is true he had his feelings under control. To this Utilitarian the pleasure of the moment was never a reason for action. But if we glance through the names here mentioned or referred to in detail, we find that he was in intimate touch with every great movement in politics, in education, in religion, in philosophy. In London, he consorts with Carlyle, Lewes, Mill, Chadwick, Spencer, Grote, Darwin, and many others. In Paris, or elsewhere on the Continent, he meets Comte, von Mohl, Helmholtz, Wundt, and how many more. He goes along the usual routes of travel. He visits

the birth-place of Goethe. He visits the home of Spinoza. He has his admired pupils. He has his passionate preferences. All this is easily inferable from this *Autobiography*, but on one condition, that the words are taken literally and at their full intellectual value. Bain's style is not in the accepted sense "literary". It aims at one main quality, clearness, and so much it does everywhere achieve. But the "feeling-tone," so easy to the literary artist, we miss here, and if we would recover it we must recall the charm of his voice and elocution. He could touch the dullest sentence into beauty. He could create the right atmosphere for every variety of composition. The silver voice, the keen grey eye, the mobile feature, the telling gesture, the whole perfect utterance,—these go with me through every line and sentence of this book. Much of it I have heard in the walks at his home in Aberdeen or in the longer walks by the river or beyond it. For me the words live again, but I feel that to the stranger they may not suggest the richness of the spoken utterance. None the less will the book remain as a sufficient narrative, telling in a hundred indirect ways the history of a great intellect and a great will.

MIND is concerned mainly with Bain's psychology and philosophy in their final and developed form; but their beginnings are a relevant gloss. Bain was born on the 11th of June, 1818. His father was a stern Calvinist of the most rigid type. His mother, in spite of an asthmatic affection, was "vigorous, active and most industrious," and untiring in duty. The father's "unflinching will" and the mother's unflagging industry and conscientiousness were obviously inherited by the son. In no other way can we explain the long record of good work disclosed to us. But the intellect was early seen to be above the normal. The atmosphere was not kindly, but the life of labour and poverty was not without its intellectual opportunities. About the age of three Bain went to a dame's school. Later, he attended other schools. "He found that I was able to enter upon Algebra after having done Arithmetic, and set me to work accordingly at the age of about seven" (p. 5). He was doing quadratic equations then. He began Euclid, but up to to the age of nine seemed to make little progress in it. At eleven, he "left school for good". Later, at the age of sixteen, he went "through the first book of Euclid at a two or three hours' sitting," next day, the second book and part of the third, and, in other six days, he had gone through the whole of the twelve books and the "data". And this without assistance and without resting from his hard day's labour at the loom. The subsequent studies in mathematics maintained the same swift pace. The mathematical bias was clear and survived through the first part of his University curriculum, but was soon submerged in the stronger bias towards logic and psychology. Doubtless, the early mathematical discipline coloured his whole thinking in the philosophical subjects and perhaps laid the foundations of the unrelenting stringency of expository method that marked all his teaching and writing. He had, too, a distinctly

strong faculty for physics and the concrete sciences ; but from his earliest excursions in theology to his latest article, the psychological interest is unmistakable and at a relatively early stage became all-absorbing. In spite of his liking for administrative work, he resigned his office at the Board of Health because he knew he "could do something better" to realise his ambitions. He went from one occupation to another persistently, until at last he found in the Professorship of Logic his true medium. The *Autobiography* is largely made up of the story of his efforts at once to maintain his intellectual independence and to secure an audience for his doctrines. How successful he was in both his long list of productions demonstrates. He regulated his daily life with a care that would have been morbid had the perfect sanity of it not been so abundantly proved by his length of days and the high quality of his thinking even to the end.

The analytic faculty seems to have been strong from infancy onwards. As a child, he took "everything seriously and to the letter". He was, he once told me, extremely impulsive and suggestible. The seriousness and the readiness to act on suggestion are correlatives. But he tells us that, at a very early stage, he was ready to see contradictions and was difficult to satisfy in argument. The same mental peculiarities survived infancy and became, indeed, his leading characteristic. The note of his life was the subordination of every feeling to the search for intellectual clearness. In the Moral Philosophy Class, when normally he should have been taking notes, we find him working out in his mind the laws of Association. Already, he had grasped the importance of a sound expository method and held that by sheer analysis we may facilitate discovery. He claimed to have anticipated some of Faraday's later results in magneto-electricity by setting down every inference possible from his earlier experiments. Among his earliest addresses he discussed the law of Similarity. Thus, in his student years or immediately after, he had already made himself familiar with the difficulties of method and had taken certain initial positions in psychology. Nothing was an unsought result. He was continually disentangling and re-piecing. This had become and remained his dominant activity. Doubtless it was this readiness of analysis, supported by such comprehensive knowledge of contemporary science, that commended him to Mill, whose *Logic* bears evidence of Bain's service. At the age of twenty-two, he had come to know Comte's *Cours de Philosophie Positive* and when he studied Comte in detail later, he naturally found in him fresh support for his own essentially positive method. The Comte Society afterwards founded in Aberdeen took up the study of both Comte and Mill. Thus we see the beginnings of Bain's logical, psychological, and ethical doctrines. In none of them was he a slavish follower either of Comte or of Mill. The detailed analytic study of every serious work put before him was always the basis of fresh departures.

In 1844, we find Bain at work on the physiology of the senses. He "had sketched the muscular sensibility as an independent sense" (p. 165) and had "got together materials for the classification of the senses". But the *Senses and the Intellect* was not published until 1855. So far as one can see, he had mastered every important work bearing on the problems raised in that book. What strikes one as amazing is that it should contain so much that is essentially modern and still remains, in some form or other, material for discussion. Perhaps its originality would have been less had the academic training been more prolonged or more scholastic. It is amusing to note that, in a paper read in 1844, on "The Definition and Classification of the Human Senses," in which the muscular sense and the organic sensations were worked out in some detail, the enumeration of the "organic sensibilities" was "considered a fair theme for witticisms of no very high order" (p. 172).

Did space permit, it would be instructive to follow the growth of some other doctrines that ultimately took a leading place in his books. For instance, his doctrine of Spontaneity was suggested by Sharpey's lectures on the brain and nervous system. "His exposition contained the most advanced views of the time. In particular, he gave a *résumé* of the nature of the nerve force, introducing some speculation of Faraday on its characters, as illustrated by his electrical researches. I did not preserve the exact tenor of the speculation; but it operated upon my mind in the way of suggesting the doctrine of Spontaneity as a necessary supplement to the recognised circle of the nervous current from sense to movement" (p. 219).

Of Bain's attitude to the Evolution theory, one word. He always felt that whatever the evolutionary history of experience might turn out to be, the growth of knowledge in the individual would always be an indispensable preliminary for analysis. He has been accused of not making full use of the evolution conception, but his plan, in the two large books, was quite independent of it. It is supposed that the theory of Heredity helped to bridge the gap between the opponents of "innate ideas" and the through-going experientialists; but when we look into this, we find that the theory of heredity in question involves the inheritance of individual acquisitions. Spencer's so-called "reconciliation" hangs on this theory. But if the Weismann doctrine be correct, Bain's misgivings as indicated in this volume and in the *Emotions* are more than excused. He never took Darwin's pangenesis seriously as more than a mere working hypothesis, and the old doctrine of heredity was accepted only provisionally. If one reads carefully the criticism of the evolution positions in the *Emotions and the Will*, one sees that most of Weismann's general criticisms were forestalled by that analysis. Heredity must be made a coherent doctrine biologically before it can be used conclusively to establish all that Spencer demanded of it. The *Autobiography* shows that it was not want of open-mindedness, but want of evidence, that made Bain hesitate.

Of the personal references, one must say that they are brief to a degree. Of real characterisation there is little. The meeting with Comte is an exception. The want of humour is selected for special note. Bain himself had the keenest sense of humour,—a thing we could not infer from his writings. Perhaps, the notes already embodied in the criticism of J. S. Mill accounts for the passing references here. But one looked for something more about Carlyle and Spencer, if not also about Lewes and Graham and Chadwick. But Bain had not the disposition to record personal impressions in the somewhat garrulous way that Spencer affects, and his intercalated moralisings are practically *nil*. In conversation, he was always ready with happy reminiscences. Every fact bears on some essential aspect of his own work and the whole makes a good basis for a biographical study, and for a philosophical study of the period that produced him.

The tale of his efforts to obtain a University Chair are full of the usual rejections for irrelevant reasons. Fortunately, a strong man, Sir George Cornewall Lewis, followed his own judgment when the true opportunity offered, and philosophical work in Scotland was thereby the richer.

Prof. Davidson's Supplementary Chapter is to me somewhat dissatisfying. Doubtless, as intimated in the note at the beginning, Prof. Davidson was justified to a certain extent by the moral implication of the "pencil note" to the "effect that the time has not yet come for constructing such materials into history or biography". But that need not have prevented some indication of Bain's later views on questions more serious than the bowling-green at Ferryhill or even the details of the Arts Curriculum. There is nowhere anything to illustrate his perfect religious toleration, or his modern attitude to religious institutions, although illustrative material is not to seek. And we should like to have had from the companions of his last hours some record of how he fronted death, calmly and placidly, having done his work. This perhaps was not the place for the record, and yet we miss it. The words not spoken at the grave might have been written here and we should all have forgiven them. "He requested that no stone should be placed upon his grave: his books, he said, would be his only monument." With that note we must end. With that, and one other from Herbert Spencer: "Indeed, I cannot remember any one, known to me directly or indirectly, who has maintained an attitude so purely philosophical; and in whom the interests of truth have so greatly predominated over all personal interests".

W. LESLIE MACKENZIE.

Hypnotism. Its History, Practice and Theory. By J. MILNE BRAMWELL, M.B., C.M. London: Grant Richards, 1903. 18s. net.

THE author of this work is well known as one of the very few English physicians who, at the present time, apply hypnotism regularly and successfully to the cure of disease. In this volume he presents a summary of the more important observations made by himself during the twelve years that he has actively practised hypnotism, and gives also a clear and very readable sketch of the history, facts, theories and methods of hypnotism. The historical chapter mainly consists of sketches of the careers and opinions of the three British pioneers of hypnotism: of Elliotson, the enthusiastic advocate of the later mesmerism, editor of the *Zooist* and physician to University College Hospital; of Esdaile, who in the hospitals of Calcutta was the first, and perhaps the last, to employ hypnotism on a great scale for the production of surgical anaesthesia; of Braid, who sifted the pseudo-science of mesmerism, separated the chaff from the grain, and gave us hypnotism very nearly in the form in which we now have it. The unfortunate attitude of active hostility, maintained by the leaders of medical orthodoxy towards these pioneers of an important new method of medical treatment, is forcibly displayed, and it must be admitted that the history as here presented does little credit to the medical profession. Then comes a brief account of the continental revival of hypnotic practice by Liebault and Bernheim and of the rediscovery, by them and their disciples of the Nancy school, of many of the facts and principles first brought to light by Braid. The following chapter describes the methods of inducing, of managing and of terminating the hypnotic state, practised by the most experienced workers, and deals with the question of susceptibility. Two facts of great and general interest are clearly established, firstly, that a tactful and experienced operator may expect to produce some degree of hypnosis in from eighty to ninety per cent. of all subjects not suffering from serious mental derangement; secondly, that, according to a consensus of opinion fully borne out by the author's own experience, persons of healthy and strong mental constitution are more readily hypnotised than those who are hysterical in any degree or otherwise mentally deficient.

There follows a long chapter devoted to a review of the experimental phenomena of hypnosis. The impression left by this review is that most of the phenomena recorded need further confirmation by experiments conducted under more rigid conditions. Especially is this the case with the experiments that are held to prove exaltation of the powers of sensory discrimination, of perception and of memory. Here we need experiments conducted with all the refinements of method that the psycho-physicists have so laboriously devised. Too often the observer has been content to assert that the performances of the subject in the hypnotic state

far surpass what is possible for him in the normal state, without having accurately determined what are the normal limits of his powers. Few persons, who have not themselves made careful tests of the sensory powers of normal individuals, realise how extremely acute the senses are, and the present writer is the more inclined to be sceptical about the reported cases of hyperæsthesia, because, in the few cases in which he has carefully compared the sensory thresholds of an individual in the normal state with those of the same individual in hypnosis, the results have been negative or have shown but a very slight lowering of threshold in the latter state.

Among the most interesting and carefully made experiments are those of Dr. Bramwell on the post-hypnotic measurement of time, here fully reported and discussed. The results of these experiments are among the most remarkable of all the many astonishing and puzzling achievements of hypnotised persons. Dr. Bramwell's most striking results were all obtained by the aid of a Miss D.; a cured patient, healthy and in every way normal at the time. The experiments were all of the following type: while in a state of hypnotically induced somnambulism "Miss D. was told that, at the expiration of a certain number of minutes, she was to make a cross and write down the hour [the minute] she believed it to be without consulting the clock, an interval of waking life always intervening between the suggestion and its fulfilment". Fifty-five separate experiments of this kind were made, and of these "forty-five were completely successful, *i.e.*, not only did Miss D. write down the correct terminal time, but this was done, also, at the moment the experiment fell due". In eight of the remaining ten cases there was a discrepancy of from one to five minutes between the time written down and the true time. The number of minutes named was generally several thousand, in many cases it was more than ten thousand, and in some cases it was more than twenty thousand, equivalent to more than two weeks. Besides the extreme accuracy with which the subject hit off the right moment, the especially striking points are the following: the subject was usually unable to state during the interval, when questioned either in the normal or the hypnotic state, the number of minutes mentioned or the time at which the period would terminate, was not aware of having made any calculation unless specially asked to do so (and then usually calculated the terminal minute of the period wrongly), but, nevertheless, felt and obeyed the impulse to make the cross and write down the correct time exactly at the moment commanded; and lastly, and most important of all, "In some instances . . . Miss D. was in a darkened room for several hours before the suggestion was executed, and absolutely without any of the ordinary methods of determining the time". Dr. Bramwell reviews the hypotheses suggested by various authors in explanation of cases similar to these and rightly concludes that no one of them will account for his facts. Gurney made similar experiments

of a much simpler nature, mentioning a given number of days or hours, and he obtained evidence which seemed to show that a secondary consciousness reckoned the term of the period, kept watch on the clock and brought about the execution of the act commanded when the right moment arrived. But Dr. Bramwell rightly points out that, even if we assume yet a third or tertiary consciousness, having better memory and arithmetical powers than the hypnotic or secondary consciousness (for the latter seemed incapable of remembering the number of minutes named and of calculating correctly the term of the period), the hypothesis is still inadequate to the explanation of Miss D.'s achievements. For, assuming that such a tertiary consciousness reckoned the term correctly, kept watch upon the clock and was cognisant of the time of day at the moment at which Miss D. entered the darkened room, still there remains entirely unexplained the fact that Miss D. wrote down the correct time at the moment commanded after the lapse of several hours in the darkened room, during which period she was entirely without objective aids to the measurement of time. The process remains as mysterious as the reported cases of telepathy and clairvoyance in hypnosis to which Dr. Bramwell unhesitatingly refuses credence. Vague references to hypothetical physiological rhythms help us no jot here, they merely serve to obscure the issue. We know of no physiological rhythm that in any degree approximates in regularity and constancy to the rhythm of a well-made clock, but only such a rhythm could serve the purpose of the hypothesis. Dr. Bramwell leaves the subject with the frank declaration that he has no theory. If we are to accept the facts as stated, and the evidence seems very strong and clear, it must be admitted that the hypothesis of telepathic communication of the time is the least startling and mysterious one that can be regarded as affording an explanation. These achievements of Miss D. are similar in kind, though far more striking in degree than that, reported of themselves by so many persons, of waking at any appointed moment after a night's sleep. It is much to be desired that those, who believe themselves to have this power, should keep a systematic, accurate and fully attested record of both successes and *failures* in a series of experiments of some length. In the very few cases in which, so far as the present writer is aware, such a record has been made, the proportion of successes was very much smaller than the statements of the subjects would have led us to expect.

In two chapters on hypnotic treatment of disease Dr. Bramwell reviews the many types of cases that have been successfully treated and illustrates them for the most part from his own practice. He concludes this section with some admirable maxims which are summed up in the one weighty sentence: "The central factor in all hypnotic treatment ought to be the development of the patient's control of his own organism". A fact of great theoretical interest is that Dr. Bramwell obtains in many cases marked therapeutic

effects by simple suggestions repeated to patients who sit with closed eyes in a drowsy state, but in whom no symptoms of hypnosis are discoverable. So good are the results thus obtained that he relies in an increasing degree upon this method, deeming it unnecessary to induce a distinctly hypnotic state.

In a long chapter of 150 pages the author briefly states and criticises the attempts to explain the phenomena of hypnotism made by a number of the best-known writers, and incidentally vindicates the correctness of the later views of Braid in those respects in which they are at variance with the views of the Nancy school. The fallacies of the Salpêtrière school and of Heidenhain are briefly dismissed. A serious defect of this chapter is the omission of all mention of the theory of Vogt and Forel which to the present writer seems by far the most helpful and promising of all hitherto propounded.

Dr. Bramwell does not put forward any theory of his own and does not fully accept any other, but he inclines to what he calls "The secondary or subliminal consciousness theory". It is much to be regretted that throughout the course of the discussion under this heading Dr. Bramwell confuses together at least two very different hypotheses, and by so doing countenances a loose mode of speech and thought that is very common, especially among those who write and speak on "psychical research". In view of the far-reaching and grandiose nature of Myers' doctrine of the "Subliminal Self or Consciousness," and in view of the widespread interest that it has excited, it is highly desirable that the term "subliminal consciousness" should be used exclusively to denote the very obscure and difficult conception that Myers sought so elaborately to justify in *Human Personality*, while the term "secondary consciousness" should be used when we wish to denote a stream of mental process of the same order as that of our normal conscious life, but separated from, and more or less independent of it. While the former is but a very vague and ill-based speculation, the acceptance of which would necessitate a complete revolution of the *Weltansicht* of philosophers and men of science alike, the latter is a conception which, though sufficiently startling and difficult to entertain, is much less revolutionary in character, and one too that seems to be forced upon our acceptance by an abundance of well-attested evidence. It may be hoped that in a new edition Dr. Bramwell will see his way to mark this important distinction and to do something towards disentangling the confusion of ideas that at present obtains so widely. In conclusion it may be said that the book is especially well suited to introduce medical men to the study and practice of hypnotism, and to prove to them that in it we have an aid to the treatment of disease that is of great power and value in many cases and devoid of danger in all, when practised on the sound lines laid down by the author; and it must be added that it contains much matter of the deepest interest to every student of the mind.

W. McDougall.

IX.—NEW BOOKS.

A Philosophical Introduction to Ethics. An Advocacy of the Spiritual Principle in Ethics from the point of view of Personal Idealism. By W. R. BOYCE GIBSON, M.A. London: Swan Sonnenschein, 1904. Pp. viii, 223.

THE scope of Mr. Gibson's book is indicated by the sub-title. His purpose is, on the one hand, "to justify the existence of a Moral Philosophy," *i.e.*, of a philosophical interpretation of moral experience which goes beyond the limitations of scientific method, and, on the other, to show that this philosophical interpretation must be undertaken from the standpoint of an Idealism, which is not Absolute or theocentric, but Personal or anthropocentric. Naturally such a programme opens up all sorts of philosophical problems of the most far-reaching character, and the fact that the author tries to cover a great deal of ground in a very small book makes the book rather difficult to report upon. The difficulty is increased when one happens to disagree with a good deal of his argument.

The first part of Mr. Gibson's task is to show that a merely scientific treatment of Ethics fails to grasp the true inwardness of moral experience, and that it is the function of a Moral Philosophy to bring out that spiritual element in, or teleological aspect of, moral facts, which is necessarily ignored by Ethical Science on methodological grounds. He works towards this conclusion mainly by means of a criticism of the opposed view of Prof. Taylor, that ethics neither requires nor permits of a metaphysical basis. But critical reference is also made to the views of other writers, such as Mr. Shadworth Hodgson, while support is derived on the other side from some papers of Prof. Bosanquet, of which Mr. Gibson makes considerable use and by which he appears to have been a good deal influenced. Mr. Gibson's chief criticisms of Taylor seem entirely just, as where he remarks on the impossible standard which Taylor sets up for a metaphysical ethics, and on the difficulty involved in maintaining an *ultimate* ethical dualism from a merely *scientific* standpoint. But I think it was, on the whole, a mistake to select Taylor's book as the chief object of criticism here. Mr. Gibson's real foe is Naturalistic Ethics, and I question very much whether Prof. Taylor would accept all the views he is apparently made to represent. The outcome of the whole discussion is that there is, on the one hand, a Science of Ethics, which is merely inductive and excludes from its view the whole teleological aspect of moral experience, and, on the other, a Moral Philosophy, which makes this teleological aspect the central feature of its treatment. Now apart from the merely verbal objection to such a narrow use of the term science, there seem to be two substantial grounds of objection to the conclusion itself. (1) If the teleological character of moral experience is really its essential character, there seems very little use of a science of ethics to interpret, or rather misinterpret, its merely

external aspects. (2) The underlying contrast between science and philosophy generally seems to be stated in an unfortunately paradoxical way. Take, for instance, a statement like the following: "The common aim of both Science and Philosophy is to give the objective supremacy over the subjective. This requires of Science that it should put fact before system, and of Philosophy that it should put system before fact" (p. 57).

The second part of the argument centres mainly about Green's *Prolegomena*. Mr. Gibson of course agrees, though after certain reservations and criticisms, with the substance of Green's plea for the recognition of a spiritual principle as the basis of morality, but he takes exception, as a Personal Idealist, to Green's view of the eternal consciousness and its relation to the human self. In his exposition of Green's metaphysical argument Mr. Gibson, besides making minor criticisms of his own, has occasion to deal with the accepted type of criticism represented, *e.g.*, by *Hegelianism and Personality*. His own criticism, in which he discovers a fatal ambiguity in Green's use of the term Nature, as at one time including and at another excluding a spiritual element, seems to me rather captious, since Green's whole aim was to show that there is more in the conception of Nature than a naturalistic theory provides for. The remarks on the accepted type of criticism are directed to emphasise the more concrete or psychological aspect of Green's spiritual principle.

Perhaps the most interesting, and I think distinctly the most valuable, chapter or Lecture is that in which Mr. Gibson explains the relation of Concrete Personal Idealism, as he understands it, to current versions of Pragmatism or Humanism. He refuses to accept any Pragmatism which involves a surrender of fundamental idealistic positions, and holds that Pragmatism at its best is simply the completion of idealism, or its deliverance from the dangers of a too abstract Epistemology. Specially suggestive are the few pages in which he explains the practical attitude required by a true Pragmatism. "The manifesto entitled 'the will to believe' has left many with the impression that this new Philosophy of Faith and Risk is an apologia of loyalty at all costs, though it be blind and headstrong and not able to give an account of itself" (p. 178). But it is not in any blind clinging to one idea that the true spirit of Pragmatism is exhibited, but rather in the thoroughness with which an idea is submitted to the fullest test of practice. The way to arrive at decision is to act out our beliefs completely, "to make courageous experience with the whole issue," that so we may judge a belief "finally after deliberate experience of its *main* requirements" (p. 183).

Mr. Gibson has a definite idea to work out, he shows a sincere spirit of inquiry and an active interest in the latest philosophical discussion, but in spite of this his book is an unsatisfactory one. This is largely due, no doubt, to the fact already mentioned, that he tries to cover far too much ground—and I should mention, by the way, that I have not so much as named a number of the topics dealt with (*e.g.*, psychological discussions in which the names of Bradley, Stout and others figure importantly). And this mistake is aggravated by the rather eccentric way in which the book is arranged. Besides the Preface and Introduction, with which most writers content themselves, we find here each chapter or Lecture with a Preface to itself, and the very Introduction must have a special "Preface to Introduction". The result is a good deal of quite needless repetition, particularly out of place in so small a book. A misprint on p. 150, by which a "number of *absolutes*" are made to "flock together," should be corrected. And the following is a rather novel rendering of a well-known dictum: "Intuition without understanding is dumb, understanding without intuition blind" (p. 120).

H. BARKER.

Philosophy as Scientia Scientiarum and a History of Classifications of the Sciences. By ROBERT FLINT, D.D., LL.D., F.R.S.E. Edinburgh and London: William Blackwood & Sons, 1904. Pp. x, 340. Price 12s. 6d. net.

Like everything that Prof. Flint writes, this is a very learned book, and is distinguished by clear thinking and lucid expression. As the title indicates, it consists of two parts—one being occupied with the definition and characterization of Philosophy, and the other with the History of the Classifications of the Sciences. The collocation is itself suggestive, throwing us back in thought a generation or more, to the time when the classification of the sciences was a very burning question among British thinkers, influenced this way or that by Comte, and when the approach to philosophy was uniformly made through a scheme of generalized knowledge. The parts are of unequal length, the first being considerably the shorter of the two; but both are packed with information and ideas.

It is a happy thought to present philosophy once again from the side of *scientia scientiarum*, because we thus get rid of the usual vague generalities on the subject and are brought face to face with the all-comprehensive unity in its relation to the subsidiary unities of the various sciences. A twofold advantage is thereby secured—first, the wider conception (philosophy) is filled with content and so becomes to us other than a bare abstraction; and, secondly, it is made to re-act upon the sciences and to aid in the determination of their boundaries and provinces. On practical and intellectual grounds alike this is to be commended. If it is well that philosophy should keep in touch with science, it is no less well that science should keep in touch with philosophy. Even in the interests of any special science, the wider outlook of philosophy and its spirit of broad sympathy and frank toleration, is a great desideratum. For “whatever may be fancied to the contrary, the truth is that the researches and studies of the mere specialist are never very productive. Special investigations only enrich science to any considerable extent when they are directed and guided by enlarged views; they are only truly successful when not exclusively special; when on the contrary, the part or section of existence examined is looked at by a reason illumined by a worthy and ample idea; a reason which sees the part in the light of the whole and the whole as related to the part.” More particularly, philosophy is of great value in guiding education. As there is a hierarchy of the sciences, based on the principle of beginning with the simple and most fundamental and proceeding thence to the more complex and derived, it is not a matter of indifference from an educational point of view whether you pay regard to the just sequence here or ignore it. On the contrary, the sequence is everything, conditioning success and progress.

So, then, philosophy is to be viewed both as theoretical and as practical; and not the least interesting of Dr. Flint's remarks has reference to the characterization of it in these two aspects. There is a strange oversight, however, that must be noted in connexion with this. The second half of the third section of Part I. is to a considerable extent a repetition of Section II.: not only the thoughts but the actual wording are the same. (Compare, *e.g.*, p. 30 with p. 58, and p. 34 with p. 60.) There is some reflection here upon the reading of proofs.

When we come to the detailed account of the various classifications from Plato downwards, we find that it is very thoroughly done, and is full of interest. Ancient and modern alike gets due appreciation. There are occasional omissions, of course (*e.g.*, Boëthius), and there are points

which one should like to see elaborated (*e.g.*, the attitude of the Stoics towards psychology); but the work does not pretend to be absolutely exhaustive—what work of the kind could be absolutely exhaustive? Much attention is paid, and rightly so, to the leading classifications of the sciences of the second half of last century—more particularly to Comte's and the two British classifications to which it gave rise, Spencer's and Bain's. Here Dr. Flint's powers of exposition and criticism are seen at their best. His final judgment on these three last is:—"Leaving out of account Dr. Bain's unsatisfactory conception as to what should be called 'Practical Sciences,' his classification of the sciences properly so called may well be regarded as an improvement on Comte's and much superior to Spencer's".

WILLIAM L. DAVIDSON.

Educational Psychology. By E. L. THORNDIKE, Adjunct Professor of Genetic Psychology in Teachers College, Columbia University. New York: Lemcke & Buechner, 1903. Pp 177.

No one with any equipment in philosophy as well as in education, who has at any time, either through necessity or desire, read largely among books of pedagogy, can have concluded his perusal without feelings in which painful perplexity plays a dominant part. There is as little agreement among them as in metaphysical treatises, and even the saving grace of cogent and subtle reasoning, present in the latter, is lacking in the former. Nor is the reader helped to argue for the side his sympathies select by any list of cases or statistical references such as enliven the competing claims of rival theorists in natural science. Is this inevitable? Doubtless it is, so long as educational writers persist in indiscriminately mingling their ideals and their facts. In any case, ideals of life, and hence of education, will not assume uniformity because of convenience to the educationist, even though education be now a separate science. But there is hope that, at least in a limited field, agreement may be possible if we temporarily, for working purposes, (1) separate the ideal from the actual and (2) apply the methods of induction as well as those of deduction to the problems of educational investigation.

As Prof. Thorndike implies, it does not follow that we have not strong opinions about educational principles because we know little about them. The same, by the way, is true of philosophy—a proposition which, however, is not advanced, though it is illustrated, in this book. It is just this unhesitating confidence of the ignorant dogmatist that this book, sometimes by affirmations of negation equally dogmatic, so usefully attacks.

Not for a moment do I, nor do I think would Prof. Thorndike, assert that much good work has not been written on education,—even the violence of the contradictions prevents one-sidedness in patient students. But the trouble is that the work is unconvincing and individual. The fluid concepts in education must be crystallised into definite units with which the experimenter and the logician may work.

Prof. Thorndike's book is a pioneer contribution to this most pressing need, and has great value rather from its purpose than from its positive results,—which indeed is inevitable at this stage. I hope that every one who lectures on Education will read it, and that every educational administrator competent to understand it will do so likewise, for impressionism has hitherto been almost unchecked in educational work, and this book is convincing as to the necessity for other methods.

But a work of this kind should scarcely endeavour to include within itself the whole range of educational theory. It is true that the author disclaims this intent, but he thinks that what people *ought* to be is a question for educational theory, whereas it is rather an ethical question; and a summary of the work of education is hardly in place; and words like 'healthy' and 'desirable' leave things pretty much where they were.

He is guilty of an unexpected *à priori*sm in being quite sure of his method, though, as he says, his results may be wrong. This is an example of what he would call the methods of philosophy, which, by the way, he deprecates.

No good purpose is served by antagonism between speculation with knowledge (or philosophy) and experimental research, and I am sorry that Prof. Thorndike should widen the breach.

He rightly attaches no more than a suggestive value to Pestalozzi and Froebel, but he identifies them, quite mistakenly, as philosophers.

He does not appear to realise the grave difficulties surrounding the question of use-inheritance. "If," says he, "people with eye defects have no visual images when their ancestors have had them for hundreds of generations, could we expect any acquired traits to be transmitted?" But ought we to expect more than the inheritance of a potentiality which might become actual in the usual way, *viz.*, through repeated visual perceptions? And these, in the terms of the case, are not possible. Moreover, one cannot cause acquirement in an individual of any trait for which he has not some natural aptitude. And there is some uncritical use of Darwinistic natural selection; *e.g.*, Prof. Thorndike maintains that facility in language has grown because those who are poor linguistically have died out. Can we seriously maintain such a proposition as this? It would at least require, on Prof. Thorndike's own principles, an elaborate array of inductive arguments.

Nor is it the abstract psychological thinker, at least in England, who has confounded different mental functions as identical (p. 28). The teacher fed on text-books does, and the experimenter and statistician often does; *e.g.*, on page 98 we have a table "Sensitiveness to Colour Differences," which really means differences of different reds; another table, "Force of Suggestion," which is really a table of the size and weight illusion. Another table is headed "Voluntary Motor Ability"; it probably means tapping. This is 'faculty' psychology indeed; these large titles may give a satisfying sense of wide outlook, but a good analytic psychologist would not indulge in them.

Chapter viii., on the influence of special forms of training upon more general abilities, contains much that is of high value. Such a study trains the observation, another the imagination, is repeated *ad nauseam*, not only by young students, but by persons whose position should imply knowledge. A careful perusal of this chapter will, one would hope, put an end to mere verbalism of this sort.

It must never be forgotten that the relation may be inverse, *i.e.*, improvement in one direction may cause deterioration in another, and, above all, that the correlation may be none, or so slight as to be of little practical consequence. But Prof. Thorndike need not introduce such dubious support for his views as that implied by a very atomistic form of psycho-physical parallelism. Two functions are correlated, he thinks, only in so far as they have identical elements as factors. He admits the difficulty of telling which "features of two mental abilities are thus identical". But, as he continues, an approximate decision may often be reached without much trouble. But, granting this, how do we know

that the common function always involves the "same cell action" in the brain? And is it probable even then, allowing the general hypothesis that the identical elements given (p. 81), "associations including ideas about aims and ideas of method and general principles" are such as are invariably or even usually accompanied by the "same cell action," by which he means, action of the same cells.

But of the practical importance of the kind of work dealt with in this chapter it is impossible to speak too highly. To take only one instance in which we might apply it. Manual Training is now taught throughout this country on the assumption that the exercises prescribed do not teach a particular trade, but favourably influence all kinds of manual sensibilities and dexterities. But not a single case is on record in which an attempt has been made by any competent person to verify the assumption.

Only lack of space prevents a fuller treatment of this book, but some of Mr. Thorndike's trenchant sayings deserve record. "Out of a thousand six-year-olds there are a score whose higher education is of more value to the community than that of a hundred of their fellows."

In reference to questionnaires he says, "The ignorance of a thousand people is no better than that of one".

The doings of the "forward" child "all witness to subnormal mental ability disguised by lack of inhibition".

The "improvement" of society "depends upon the elimination of the worse, not on their reformation".

In his chapter on the relation between mental and physical traits he sums up definitely against the prevailing notion that improved muscular efficiency, of itself, implies increased mental power, and speaking generally, Prof. Thorndike, within a limited space, probes more educational superstitions than any writer I am acquainted with; superstitions, too, which have the advantages of current acceptance and often occupy the entrenched positions of authoritative exposition.

W. H. WINCH.

"General Intelligence" Objectively Determined and Measured. By C. SPEARMAN. Reprint from the *American Journal of Psychology*, vol. xv., No. 2, April, 1904, pp. 201-292.

Mr. Spearman's pamphlet is comprehensive in design and bold in execution. He complains that, hitherto, experimental psychology has been of little service, even in studies such as education, where it should, presumably, be of much value. It is difficult from the educational standpoint not to allow that there is much truth in the assertion. It is suggested that it owes its ineffectiveness to the want of a mathematical methodology; but it is more probable that the failure is due to a want of knowledge by the experimenters of school-conditions, and an inadequate grip of what the actual problems really are, coupled sometimes with an imperfectly worked out psychological analysis.

Mr. Spearman reviews much of the work already done in mental tests, and has no difficulty in showing sharp and frequent contradictions. He charges "the entire antecedent literature" with "four grave faults," (i.) that the experimentally gained figures have been too selectively treated, (ii.) that the actual results of individual experiments have not been given in full, (iii.) that errors of observation have not been eliminated, (iv.) that a thorough preliminary investigation of all the terms concerned has not been made. These are serious and sweeping charges; but, with the exception of (ii.), it is doubtful whether they are not counsels of perfection,

and (iv.) seems to me to emphasise the analytic aspect which, elsewhere, the author appears to underrate. Still, there is much acute criticism in the remaining sections of this chapter as applied to the reasons for failure in some foregoing experiments.

The positive part of the pamphlet consists in five series of experiments which, it is claimed, show that 'sensory discrimination' and 'general intelligence' are closely correlated in a positive way. The sensory discriminations dealt with are those of Pitch, Light and Weight; and 'General Intelligence' is estimated by position in class, or by an estimate of teachers and others.

Completely carried out, such a scheme would have considerable value. But, of five series of experiments, the last does not seem to apply, as it contains no independent intelligence values. In the fourth series there is much valuable data for estimating general intelligence, but it is compared experimentally with 'pitch discrimination' only. The third experimental series should, in view of the author's own statements as to its conditions, be omitted. In the second series there is no evidence of general sensory discrimination, nor is there in the fourth series (p. 90). Table 1, however, seems complete. It would be better, perhaps, to arrange the discriminative thresholds and the intellect values in the same way, that is, both by numerical estimate or both by position in a series. It would, moreover, be valuable, in connexion with the table, to show exactly how the formulæ are applied in the case of these particular results. It does not seem unreasonable to ask that any view which is strongly opposed to the great bulk of work already done should be exempt from the least vagueness and should be demonstrated closely and cogently.

Mr. Spearman's experimental results, as here presented, do not seem to me to be wide enough to support his final conclusion, which is that 'general sensory discrimination' and 'general intelligence' show a correspondence which is not appreciably less than absolute. We seem to be back again to the 'pure ego,' which is equally able to perceive and synthesise everything, provided that it gives attention to it. In conclusion I should like to say that I have read this pamphlet several times with interest, and that it is to be specially commended to all those who are interested in the application of mathematical formulæ to the results of psychological experiment.

W. H. WINCH.

The Religion of the Universe. By J. ALLANSON PICTON, M.A. London: Macmillan & Co., 1904.

As if to qualify in earnest as a school of religious thought Agnosticism has developed both a right and a left wing. The place of Herbert Spencer, it is not superfluous to show, is not on the left, but with the right wing, which has religious affirmations to offer as well as religious negations. Mr. Picton makes this abundantly clear in his chapter on Spencer's doctrine of the Unknowable, and heartily accepts him at his own estimate as 'the first true reconciler of religion and science'. He also submits that the substance of Spencer's religious teaching is more positive than its nomenclature, and that it can be legitimately exhibited as a pantheistic type of creed. The power which is 'behind humanity and behind all other things,' he points out, would have been more fitly described as the Eternal; and the Spencerian Eternal, when thoughtfully construed, is not readily distinguishable from the God of Spinoza.

As a consequence of his elevation of Agnosticism into Pantheism, Mr.

Picton is able to write a long chapter on 'what may be known of God'. His fundamental position is that 'God is all in all and identical with the Universe,' or to speak more exactly, identical with 'the unity of substance and of energy in which and by which all things are what they are' (p. 152). From this standpoint it is clear that many things can be affirmed about God, not indeed about what He is in Himself, but about what He is to us. We can affirm that God is 'the ground and substance of our being, the co-ordination of all finite variable good, the only begetter of the sympathies and aspirations in us which make for the harmony and happiness of our world' (p. 145). The identification of God with the Universe prepares us for the denial of divine personality, but the strength of the argument at this point is less conspicuous than the violence of the language.

The main question raised by Mr. Picton's book is whether the Universe can suffice as the object of religion. The book itself may be cited as evidence. It is pervaded by a spirit of profound religious reverence, and even in respect of unction its eloquent pages will easily bear comparison with modern evangelical preaching. And it is clear that at the present time there are many in whom religion only survives as a sense of awe engendered by their knowledge of the immensity and the marvels of the Universe, and their recognition of an inscrutable power behind the things that are seen. But one thing is wanting in the religion of the Universe which appears to have been an essential and constant element in the religions which it would seek to displace. Since Schleiermacher it has been common to regard pious feeling as the vital aspect of religion, but a more careful analysis has shown that what is no less distinctive is that a religion addresses itself to a practical purpose. Every religion has undertaken to do something, and something so great that it may be defined as the means of enabling the worshipper to attain his chief end. The end might be as low as the ambitions of the savage, or as high as the sanctification of the soul; but no religion from the lowest to the highest has failed to recognise that the task set it was to come to the help of man. And the question is, if the Universe, besides exciting the semi-religious sentiment of 'cosmic emotion,' can persuade mankind that it is in its power to help in their deepest needs. Mr. Picton, no doubt, sees that there is something legitimate in this demand, and he promises so far to meet it. He would still have congregations to worship in cathedral and church, and he thinks more highly of prayer than to ascribe to it merely subjective efficacy. 'When we pray for help we are reacting to the influences playing on us from all that is, and if in such things the experience of humanity may be trusted at all, this very reaction has often quickened communion with infinite power, and men have been strengthened though they know not how' (p. 328). He would even expect conversions involving a death to self and a resurrection to a more glorious life through inspirations of the Unknowable which would thus make itself known to us as the Holy Ghost. But is there any reason to think that mankind at large would be able to share this confidence in a God who was understood neither to know nor to love? Mr. Picton confesses that it is 'the man in the street who after all most needs salvation,' and the religion of the Universe, however it may appeal to poets and philosophers, will impress his practical mind as a very problematical salvation when it dispenses with the mind and purpose of a saviour.

W. P. PATERSON.

Ideals of Science and Faith. Essays by various authors, edited by the Rev. J. E. HAND. London: George Allen, 1904. Pp. xix, 333.

This volume consists of a number of essays brought together with the design presumably of illustrating the respective attitudes of broad-minded scientific and religious thinkers towards each other's problems at the present time. The representatives of science are Sir Oliver Lodge (whose article in the *Hibbert Journal* is here reprinted), Profs. J. A. Thomson, Geddes and Muirhead, Mr. Victor Branford and Mr. Bertrand Russell. The representatives of religion are the Revs. John Kelman, Ronald Bayne, Philip N. Waggett and Mr. Wilfrid Ward.

Of the book as a whole it is impossible to speak favourably. There has been little or no attempt to secure consistency in the general method of treatment. Some of the writers seem hardly to know what is expected from them, others seem to take the opportunity to discourse on their favourite themes. There is thus a good deal in the book that has very little bearing upon the main subject, e.g., the essay in which Prof. Geddes expounds his views on education, and practically all the essays on the religious side except that of Mr. Wilfrid Ward. In the case of the religious essayists, however, it is perhaps a sufficient apology to mention the subjects on which they were apparently asked to write: the *Presbyterian* view, or the *Church of England* view, of the relations of religion and science. There is more meaning, of course, in speaking of a specifically Catholic view of the relations of religion and science, and Mr. Wilfrid Ward's short essay, one of the best in the book, is a very able statement and defence of the attitude of the Roman Church towards a progressive secular science. The various scientific essays are of various merit. Prof. Muirhead's "Psychological Approach" (all the essays are "Approaches") is a business-like statement of the limits of mechanical explanation. But the scientific expositions of Prof. Geddes and Mr. Branford suffer from defects which the following two quotations may respectively serve to indicate: "If the individual is the product of his ancestry, a transient whirlpool in the stream of life, a mosaic of hereditary contributions from many forebears, a chip of the old block, a detachable pendant on the eternal bead-string of germ-cells," etc. "The psychic products and processes of human evolution (Language and Literature, Science and the Fine Arts, Industrial aptitude and Religious capacity) have, in their earlier phases at least, been developed mainly by art and transmitted mainly by ceremonial. Art and ceremonial may, from a certain standpoint, be regarded as sociological structures, corresponding to what psychologically is the function of educability; and educability itself is, as Prof. Ray Lankester has well shown, the psychological correlate of what biologically is a surplussage of cerebral development beyond the needs of a material struggle for life." Why Mr. Russell's paper, here reprinted under the title of "An Ethical Approach," has been included in the volume one is at a loss to conjecture. His tones are in singular contrast with those that prevail in the rest of the book. "Brief and powerless is man's life; on him and all his race the slow sure doom falls pitiless and dark. Blind to good and evil, reckless of destruction, omnipotent matter rolls on its relentless way."

H. BARKER.

Scientific Fact and Metaphysical Reality. By ROBERT BRANDON ARNOLD. Macmillan & Co., 1904. Pp. xi, 360.

The main object of this work is said to be "the furtherance of efforts to bring the developments of science into touch with the point of view of

metaphysics". (When will writers on philosophical subjects cease abusing that well-intentioned but somewhat intractable metaphor 'the point of view'? Their style would gain in clearness and elegance if they would employ it more sparingly and more correctly.)

The book is an ambitious attempt to construct a complete theory of the universe by one who is equally familiar with the most recent writings on Natural Science, Psychology and pure Philosophy. Unfortunately neither wide reading nor a taste for speculation dealing with ultimate problems can ensure metaphysical acumen. The volume before us can hardly be said to be distinguished either for the cogency of its argumentation or the value of its conclusions. 'Totalisation' is the technical term with which Mr. Arnold proposes to unlock all closed doors. 'Mind'... 'is the totalisation of its own material body.' But mind can be 'active,' as in the animals, without being 'actual,' as it is in man, in whom alone we find introspection. But mind as known in introspection is described only in metaphorical terms as the 'flash of consciousness' in which the neural processes are 'totalised'. A curiosity of the present work is a theory of 'material images' interposing between an object and the true 'mental' image; this reminds one strangely of the scholastic doctrine of sensible forms. A discussion on Human Immortality concludes a volume which is certainly quite up to date, for it contains a reference to the Prime Minister's recent address at Cambridge and the presence of the Russian volunteer cruisers in the Red Sea!

G. R. T. Ross.

Le Néo-Criticisme de Charles Renouvier. Théorie de la Connaissance et de la Certitude. Par E. JANSSENS. Louvain et Paris, 1904. Pp. viii, 318.

Of all the lives devoted to philosophy that of Renouvier was one of the longest, most laborious and most heroic. At all events, it would be hard to parallel the spectacle presented by the last years of a sage of eighty-five and more publishing every year a new important volume on the problems dear to his heart, and on his very deathbed delivering to his disciple, M. Prat, his last message to mankind. It is no wonder therefore that so remarkable a personality and so voluminous a writer should have speedily fallen a victim to the commentating critic who preys upon the systems of the dead so soon as their authors are no longer alive to explain the difficulties that are suggested by their views. Not that Dr. Janssens is an unfavourable specimen of his kind; only it seems a pity that Renouvier did not fall to one capable of taking a larger and more sympathetic view of his achievement. Dr. Janssens' study is written from a Roman Catholic point of view, and has not forgotten the radical republicanism and Protestant affiliations of Renouvier. Still its biographical sketch is interesting, and the exposition of his doctrine also will be found useful, even though it is avowedly incomplete. It is restricted to his theory of knowledge and certitude, and it may be doubted, whether in so 'personalist' a thinker this really reaches to the core of the system. It is not surprising that Dr. Janssens should lay most emphasis on the features he has studied, and regard the Neo-criticism as the most essential aspect of Renouvier, but when one considers the character of his sphere of influence, it will be found to lie rather in the mighty impetus he has given to the Voluntarism and Personalism of the present day. For these reasons Dr. Janssens' criticism seems somewhat ineffective and lacking in penetration. To find, *e.g.*, as the outcome of a long discussion the conclusion that time is neither wholly subjective

nor objective, but mixed, does not seem very profound, nor will the compromise that certainty is produced 'habitually' by the intellect, but 'accidentally' also by the will, please either the intellectualists or their adversaries. This is perhaps the best that can be done from the standpoint of the Scholastic dualism which is still the official philosophy of the Catholic Church, but before it can intervene effectively in the controversies of the day it will have, like other philosophies, to grasp the fact that the aim of Voluntarism is not to assign to the 'will' the functions of the 'intellect,' but rather so to analyse the latter phrase as to bring out the volitional structure and dependence of every intellectual function. And it is Renouvier's lasting claim to the gratitude of thinkers to have been the chief pioneer of this movement, even though his somewhat too scholastic forms may require to be simplified and developed in the direction of the more empirical 'humanism' of Prof. James.

F. C. S. SCHILLER.

Immanuel Kant und seine Weltanschauung. Gedenkrede zur Feier der 100. Wiederkehr seines Todestages. Von WILHELM WINDELBAND. Heidelberg: Carl Winter, 1904.

Kant's Bedeutung für die Gegenwart. Gedenkrede zum 12 Februar 1904. Von Prof. Dr. WILHELM JERUSALEM. Wien und Leipzig: W. Braumüller, 1904.

These are two of the numerous publications to which the celebration of the centenary of Kant's death gave rise. At every German university the day was made the occasion for a *Gedächtnisstunde*, and abundant evidence was thereby furnished of the powerful influence Kant still exerts upon the thought and the thinkers of his country.

Prof. Windelband's Heidelberg address, chaste and dignified in style and diction throughout, is characterised by that soundness of judgment and comprehensiveness of view we have learnt to expect in anything that emanates from him. He draws in clear, strong outline a vivid picture of the Kantian *Weltanschauung*, not untouched by an enthusiasm for his subject which lends additional interest to the effort. The *Kernpunkt* of the Critical Philosophy he discerns in the new attitude it assumed to the old antithesis of the sensuous and the supersensuous worlds. Hardly less pointed and sharp at first than what meets us in the Platonic system, the antithesis is softened as the investigation proceeds, until at last the two worlds are seen to stand in intimate connexion, and the ultimate problem to be solved is the manner and mode of their relation. A negative and a positive trend of thought manifest themselves, according to Prof. Windelband, in Kant's speculation. The former predominates in the analysis of knowledge: scientific truth is limited to the realm of phenomena and is denied access to that of absolute reality. But this negative result leads on irresistibly to a means of advancing beyond it; for, if knowledge be confined to the phenomenal, there must needs be contained in the nature of knowledge itself the motive which has necessitated the distinction between the phenomenal and the real. The motive in question is found by Kant to be based on the fact that whilst all the conceptual work of the understanding is directed towards fixing and determining the objects of experience as elements in a completed whole, the sensuous material with which the understanding works is given to it only in space and time relations that nowhere admit of a summed-up totality. Thus in the understanding's own sphere of activity,

there emerges of necessity a consciousness of problems of an ultimate kind, but "was in ihnen aufgegeben ist, ist eben nicht gegeben," and we fall into illusion the moment we attempt to construe the demands of reason as though they were objects presented in experience. From the outstanding questions of physics, then, there springs up inevitably the impulse to metaphysics, the concepts of which are logical ideals, that set scientific cognition on its quest but elude its attempts at realisation. Yet "wo das Wissen versagt, tritt das Gewissen ein". Here, however, once more, the negative trend of Kant's thinking comes at first prominently to view. He begins his treatment of Ethics by instituting a hard and fast opposition between duty and inclination. No other sanction can the former have than that which reason itself confers, no other motive can it recognise than that of respect for a self-imposed law. And "so Kant becomes the strong opponent of all *Trinkgeldmoral*, which is pleased and willing enough to perform the virtuous deed, and then holds out its hand in the hope that some little consideration in the way of happiness may fall to its share,—although he is, at the same time, the merciless judge of that *Tugendteitelkeit*, which lauds itself for having prudently chosen the better part and for having won real bliss thereby". But in the practical, no less than in the theoretical sphere, the progress of the inquiry compels him to abandon the rigid line of demarcation; after all, the field of exercise for the moral will is the world of space and time, and its actual work consists in overcoming the resistance offered there to its realisation. Such work must be essentially infinite in character, not simply because the field of exercise appears infinitely extended, for to that infinity no reality need correspond, but because the moral law would cease to have significance were it completely fulfilled. The ideals of life, just as the ideals of knowledge, are accordingly for Kant demands, efforts, that serve as finger-posts to indicate the value attaching to empirical reality and the goal towards which it may be made to tend. Hence the final problem of the Kantian philosophy,—this namely, whether the phenomenal world can be or perhaps must be regarded in such a way that the gradual embodiment of a supersensuous plan or purpose constitutes its essential meaning or *raison d'être*. By answering this question in the affirmative in what Prof. Windelband considers the greatest of his books, the *Critique of Judgment*, Kant spans at last the gulf between the two worlds previously kept apart, and, through the notion of the adaptation of the realm of empirical fact to the ends of reason, secures a vantage ground from which to survey the entire universe of being as one intelligible system interpretable on the lines of an ethical teleology. The Kantian *Weltanschauung* culminates in the conception of human history as the gradual "Verwirklichung der Zwecke der übersinnlichen in der Sinnenwelt selbst". It is true that Kant retains to the end a certain relative dualism. In contrast with Herder, to whom the shaping of the mechanism of nature into a realm of morality and civilisation seemed due to an immanent necessity of physical life as such, he attributed this result to acts of freedom on the part of rational beings, who find themselves, it is true, in the midst of an environment which is more or less antagonistic to their aims, but which on that very account displays all the more its adaptability for calling out the energy of moral wills. "It is well so, for only thus could there really be anything in the world for us to do."

Prof. Jerusalem, in his address at Vienna, pursues a different line of reflexion. He begins by quoting a noteworthy utterance of Kant's, preserved in the *Tagebücher* of Varnhagen von Ense, "I and my writings have come a century too soon. A hundred years hence I shall be really

understood, and then my books will be studied afresh and receive recognition." The first statement Prof. Jerusalem regards as erroneous; in how far the second is true he devotes his address to deciding. The main achievement of the Kantian Epistemology he takes to be the discovery of Self-consciousness as the ground of objectivity in knowledge, and of the function of judgment as fundamentally involved in all apprehension. The table of categories, however, is a remnant of the scholasticism of Wolff, and the doctrine of the *a priori* character of space and time can no longer be defended in view of the account modern physiology has to give of the development of the sense-organs, although in what way the results of physiology bear upon the Kantian theory is not apparent. Kant, so Prof. Jerusalem urges, has bequeathed to us the task of analysing more exactly the activity of knowing, and, through examination of what takes place in the actual living process of judging, of ascertaining the form which is the common characteristic of knowledge. Merely formal Logic, however, cannot help us here. Only when it has been shown, on the basis of psychology and from the standpoint of Evolution, how our knowing faculty has been set in motion by purely practical motives, and been developed gradually to a purely theoretical function, shall we be in a position to determine the form and limits of human knowledge in general. Further, Kant's Epistemology stopped short at providing a basis for the natural sciences. But the historical sciences are equally in need of epistemological criticism. What Kant called the synthetic unity of Self-consciousness must here come into requisition in a way other than that brought to light in the analysis of objects of sense-perception. Such a criticism cannot be undertaken without a better acquaintance with the psychological character of the process of understanding verbal utterances and of apprehending human occurrences than we possess. We are still far too dogmatic in reference to our capacity of reconstructing past periods of history and of grasping the meaning of mental products other than our own. It may be that the psychology of the next few years, by disturbing this confidence of ours, and awakening us from our dogmatic slumber, will create a species of historical scepticism. In that case, at all events, we shall feel the need of a critical foundation for the mental sciences similar to that which Kant has left us for the natural sciences. Here, then, according to Prof. Jerusalem, is a promising field for carrying on Kant's work in Kant's own spirit.

G. DAWES HICKS.

Principien der Metaphysik. Von BRANISLAV PETRONIEVICS, Dr. Phil. Erster Band, Erste Abtheilung. Allgemeine Ontologie und die formalen Kategorien. Mit einem Anhang: Elemente der neuen Geometrie. Heidelberg: Carl Winter's Universitätsbuchhandlung, 1904. Pp. xxxi, 444.

This book is not easy to understand, because its contentions are unusual and its style is involved. But the following appears to be the substance of the author's views.

The most fundamental of relations is that of diversity, and diversity itself is based upon negation.¹ Negation is either simple or derivative: the former is the relation which subsists between opposites, such as pleasure and pain or white and black. This relation also subsists be-

¹ This word is used by our author in a very peculiar sense: it seems to be analogous to the relation of contraries in the syllogistic logic.

tween space and time. The derivative sort, as *e.g.*, that which subsists between black and sweet, is obtained by a series of simple negations. (It follows, as also from other parts of the author's theory, that a quality may have more than one opposite.) Numerical diversity results from negation; but also two objects are numerically diverse only in so far as they occupy different positions in space: the nearer they are, the less numerically diverse they are. If they are in consecutive positions, they are separated by a simple negation; if not, they are separated by a derivative negation, *i.e.*, by a series of simple negations.

The author holds that *becoming* is logically impossible, and introduces the notion of absolute substance to avoid it. It is hard to make out the relation of his absolute substance (which soon retires modestly into the background) to the spatio-temporal world. He holds that instants are of two sorts: those when things exist, and those when they become. But, since becoming is unreal, the moments when things become (like the mongoose that ate the snakes) are also unreal. They are conceived merely as boundaries between times, whereas the moments of the other kind are actual constituents of time. Similarly in regard to space: there are real points, which are occupied by things, and there are imaginary points, whose only function is to keep the real points apart. Imaginary points and instants are both, I think, regarded as simple negations in the sense explained above. The number of points in space is finite, and the author hopes that the exact number may some day be calculated by the help of the theory of numbers. Similarly the number of instants in the past is finite, but not (oddly enough) the number in the future. This is because the future, being uncompleted, may be endless without involving an infinite whole. (This argument seems very questionable: it amounts only to the contention that we shall never have passed enough instants to enable the advocate of infinity to say "I told you so".) It is held that we have direct experience of instants, though not of points.

Motion, of course, is discrete like space and time, and velocity has a maximum, in which the moving particle occupies consecutive real points in consecutive real instants. The geometrical appendix works out the geometry which would result from filling a finite portion of a plane with a network of equal equilateral triangles (or squares), and regarding the angles of these triangles as real points, the remaining points of the plane being imaginary points. This geometry is regarded (with extensions to any number of dimensions not exceeding six) as the only logically possible geometry. (It is wrongly supposed that a space with a finite number of points must be Euclidean. There is a three-dimensional non-Euclidean space consisting of thirteen points.)

The rejection of infinity is made on the ground of four alleged contradictions. These are familiar, and the argument commits fallacies equally familiar. A criticism of Cantor contains what, in an undergraduate, would be called "howlers," *e.g.*, inability to see the difference between cardinal and ordinal numbers. Many objections which naturally occur to one in reading appear not to have occurred to the author, and in any case remain unanswered. In spite of these defects, however, the book deserves praise for a certain vigour, for fearlessness of consequences, for emancipation from authority, and for a very serious endeavour to understand thoroughly the topics discussed.

B. RUSSELL.

Rudolf Euckens Welt- und Lebensanschauung. Von Dr. OTTO SIEBERT. Langensalza: Beyer & Söhne, 1904. Pp. 72.

This is a succinct, accurate and interesting account of Prof. Eucken's philosophical system. Dr. Siebert feels himself in such entire sympathy with his author's views on every subject, except Christian dogma, that he gives us nothing by way of criticism. Instead we have a few pages in conclusion enforcing Prof. Eucken's position in regard to Religion.

D. M.

L'Imaginazione Creatrice nella Filosofia. Di ANTONIO MARCHESINI. Torino: (no date). Pp. 131.

This book was written as a thesis for the author's degree and doubtless commended itself to the examiners as sufficient for the purpose. But it can hardly claim the attention of the general public. Signor Marchesini undertakes to show that 'the objective value of philosophical doctrines is directly as the predominance of perception, and inversely as the predominance of the imagination' (p. 131). If this means that those can best discover the truth who see things most truly as they are, the statement may be accepted, but it hardly adds to our knowledge. If on the other hand it means that the best observer of phenomena makes the best philosopher, one feels strongly inclined to disagree. Aristotle was a consummate observer, but from his absolute enslavement to appearances he often went wrong where other thinkers, like the Pythagoreans and Democritus, were led to the truth by their creative imagination. The author attempts to prove his case by running through the whole history of philosophy, his knowledge of which may not always be due to first-hand study, and summarily setting down whatever does not meet his approval to a too free use of the imagination. The task of discriminating between truth and error is greatly facilitated by presenting in every instance the opinions of Prof. Ardigò as the last word on the subject. Even philosophers are human, and Ardigò may be excused for introducing his disciple's work to the public with a highly eulogistic preface. But at this rate his praise, like that of the aged Goethe, will soon be taken as a brevet of mediocrity.

A. W. BENN.

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 R. K. Gaye, M.A., *The Platonic Conception of Immortality, and its Connexion with the Theory of Ideas*, London, C. J. Clay & Sons, 1904, pp. viii, 257.

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- Annie Besant, *A Study in Consciousness*, Theosophical Publishing Society, 1904, pp. ix, 443.
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- William H. Winch, M.A., *Notes on German Schools*, Longmans, Green & Co., 1904, pp. 264.
- L. Houllevigue, *Du Laboratoire à l'Usine*, Armand Colin, pp. xii, 297.
- Dr. Franz Lukas, *Psychologie der Niedersten Tiere*, Williams & Norgate, 1905, pp. 276.
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- D. A. Gille, *Philosophisches Lesebuch*, Williams & Norgate, 1904, pp. vi, 148.
- Dr. Christoph Sigwart, *Logik*, dritte durchgesehene Auflage, Williams & Norgate, 1904, vol. i., pp. xxiii, 498; vol. ii., pp. xiii, 797.

X.—PHILOSOPHICAL PERIODICALS.

PHILOSOPHICAL REVIEW. Vol. xiii., No. 4. **F. J. E. Woodbridge.** 'Jonathan Edwards.' [Beginning his life of constructive thought in a philosophy grounded on reason, Edwards was diverted by emotive experiences, for which he could not account, to his peculiar Calvinistic theology.] **W. B. Pillsbury.** 'The Psychological Nature of Causality.' [The anthropomorphic feeling of strain, which is an essential element of the sign of causality, will be called up by the first of two succeeding events, when they have occurred together frequently, and when all other experiences serve to confirm the assumption that they cannot exist apart.] **G. Spiller.** 'Voluntarism and Intellectualism: a Reconciliation.' [Modern voluntarism arose as a reaction against the conclusions of science. But it is, after all, only a purification of intellectualism; and as such is as much the foe of superstition and anarchy as is intellectualism itself.] Discussions. **G. M. Andrus.** 'Professor Bawden's Interpretation of the Physical and the Psychical.' **M. Prince.** 'The Identification of Mind and Matter.' Reviews of Books. Summaries of Articles. Notices of New Books. Notes. **G. N. Dolson.** 'Some Aspects of the Recent Nietzsche Literature.' Vol. xiii., No. 5. **J. A. Leighton.** 'The Infinite New and Old.' [The notion of the infinite in recent metaphysics fluctuates between two meanings: that of the potential infinite, the infinite as the law of serial order, and that of the actual infinite, the infinite as the absolute limit of human striving.] **I. Husik.** 'On the *Categories* of Aristotle.' [The *Categories* is closely related to the *Topics*; it was written earlier, and serves as a basis for the larger work.] **A. O. Lovejoy.** 'Proceedings of the Fourth Annual Meeting of the Western Philosophical Association, held at Columbia, Mo., April 1 and 2, 1904.' Discussions. **H. H. Bawden.** 'The Physical and the Psychical.' **C. A. Strong.** 'Professor Bakewell on the *Ego*.' **C. M. Bakewell.** 'Professor Strong on the Passing Thought.' Reviews of Books. Summaries of Articles. Notices of New Books. Notes. 'The International Congress of Arts and Science.' Vol. xiii., No. 6. **J. Ward.** 'The Present Problems of General Psychology.' [Critical and historical discussion of the definition of psychology, the nature of subject activity, and the atomistic theory of mind.] **M. F. Washburn.** 'A Factor in Mental Development.' [Discrimination of present experiences and clearly conscious recall of past experiences depend upon the organism's growing power to react to stimuli not in immediate contact with the body.] **A. K. Rogers.** 'Scepticism.' [It is logically impossible to prove the necessity of a particular view of the world. But the root of assurance lies behind logical necessity, in the depths of our active and practical nature.] **T. de Laguna.** 'Ethical Subjectivism.' [This ethical standpoint, if not right, is right as against its opponents; its faults are not the transparent errors commonly alleged; it can obtain needed correction from within, by the development of its own implications.] Discussions. **G. M. Andrus.** 'Professor Bawden's Functional Theory: a Rejoinder.' Reviews of Books. Summaries of Articles. Notices of New Books. Notes.

PSYCHOLOGICAL REVIEW. Vol. xi., No. 4-5. **L. P. Boggs.** 'An Experimental Study of the Physiological Accompaniments of Feeling.' [A sphygmographic study. The results agree with those of Wundt for pleasantness-unpleasantness, agree partially for excitement-depression, and are radically different for strain-relaxation.] **T. H. Haines** and **A. E. Davies.** 'The Psychology of Aesthetic Reaction to Rectangular Forms.' [Apparatus, method, experiments; classification of motives to judgment. Explanation in terms of sensory (adaptation) and motor (eye, arm) factors, of attentional moments, of suggestion (specification of a definite use for a given figure), and association (likeness of figure shown to a class of figures).] **R. B. Perry.** 'Conceptions and Misconceptions of Consciousness.' ["The term consciousness has reference to relativity and exclusion within a world of reals, and therefore cannot signify a principle constitutive of that world itself."] **W. F. Dearborn.** 'Retinal Local Signs.' [Experiments show discrepancies between accuracy of motor impulse and delicacy of local discrimination. The former is therefore less important than has been supposed. Moreover, it is variable, and thus altogether in contrast to the relative constancy of spatial discrimination.] **K. Dunlap.** 'Studies from the California Psychological Laboratory: vi. Some Peculiarities of Fluctuating and of Inaudible Sounds.' [(1) Introspective study of physical interruptions in subliminal phases. (2) Gas-flame tones fluctuate (contrary to the results of Heinrich and Titchener).] **H. B. Alexander.** 'Some Observations on Visual Memory.' [After-image and imagination image, projected and non-projected, dream image and waking, even voluntary and spontaneous, all are united by liminal, indecisive cases. The facts of imagery suggest a primitive form of plastic intellection, intuitive rather than reflective, yet having the true marks of rational thinking, dissociation and ideal synthesis.] **C. Caverno.** 'Incipient Pseudopia.' [Record of subjective visions.] Vol. xi., No. 6. **E. B. Holt.** 'The Classification of the Psychophysics Methods.' [An attempt to rationalise the traditional methods of psychophysics under the headings of problem, procedure and method. In essentials, the author's position is akin to that of Müller's *Methodik*.] **C. T. Burnett.** 'Studies in the Influence of Abnormal Position upon the Motor Impulse.' [Experiments upon the Japanese illusion (Henri's undercrossed hands illusion) and upon mirror illusions; detailed summary of results.] Discussion. **C. L. Herrick.** 'Mind and Body: the Dynamic View.'

AMERICAN JOURNAL OF PSYCHOLOGY. Vol. xv., No. 3. **J. P. Porter.** 'A Preliminary Study of the Psychology of the English Sparrow.' [Experiments with cage fastenings, 'number' tests, form tests, colour tests, maze. The method of learning is by trial and error; attention is narrow; persistency striking; there is some proof of imitation; habits are easily modified; memory is relatively good; sense of position nice.] **L. D. Arnett.** 'The Soul: a Study of Past and Present Beliefs.'—II. [Psychological theories of the soul; analysis of questionnaire returns.] **R. Macdougall.** 'Facial Vision: a Supplementary Report, with Criticisms.' [The perceptual process involved may depend, in different individuals, upon several sources of sensory stimulation. Audition and the temperature sense are to be emphasised.] **F. Kuhlmann.** 'Experimental Studies in Mental Deficiency: Three Cases of Imbecility (Mongolian) and Six Cases of Feeble-mindedness.' [General description of cases; experiments on memory, practice (throwing at a mark and tapping), attention and effort (tapping, association and discrimination time, attention span), discrimination (domino test). Summary of results; bibliography.] Literature. **C. Spearman.** 'The First Ger-

man Congress for Experimental Psychology.' Notes. Vol. xv., No. 4. **T. L. Smith.** 'The Psychology of Day Dreams.' [Report of question-ary returns: morality of day dreaming, morbid day dreams, their relation to constructive imagination, etc.] **G. M. Whipple.** 'Reaction Times as a Test of Mental Ability.' [Denies the availability of reaction tests in determining the mental ability of school children.] **W. B. Pillsbury.** 'Studies from the Psychological Laboratory of the University of Michigan.' **C. E. Galloway.** 'The Effect of Stimuli upon the Length of Traube-Hering Waves.'—vii. [The waves are lengthened by any form of stimulus (five observers) and by muscular contraction (two observers).] **B. Killen.** 'The Effects of Closing the Eyes upon the Fluctuations of the Attention.'—viii. [Momentary closure at regular intervals lengthens and increases the general efficiency of the waves, and decreases the time of visibility.] **G. Chiabra.** 'The Tendencies of Experimental Psychology in Italy.' [Deals chiefly with the work of De Sarlo.] **R. H. Gault.** 'A Sketch of the History of Reflex Action in the Latter Half of the Nineteenth Century.' [The Pflüger-Lotze discussion; inhibition of reflexes; summation phenomena; vascular and muscular tonus; tendon reflexes; direction of transmission, and co-ordination of reflexes; theories.] **G. Spiller.** 'The Problem of the Emotions.' [Analysis of emotion, in terms of organic needs, as mental attitude in a state of excitement; delimitation of emotive states.] **H. C. Stevens.** 'A Simple Complication Pendulum for Qualitative Work.' Literature. **I. H. Coriat.** 'Psychiatry.' Subject Index.

REVUE DE PHILOSOPHIE. 1er Mai, 1904. **Comte Domet de Vorges,** 'L'abstraction Scolastique,' in reply to M. Bernies's strictures in the March number, admits that the *intellectus agens* is not revealed by consciousness; it is argued from that principle of scholastic metaphysics which everywhere distinguishes active principle and subject-matter; the subject-matter of an abstract idea being a sensation, which is a likeness of its object, and the active principle being no other than the *intellectus agens*. By *le mathématisme*, which, says **X. Moisan**, is characteristic of modern philosophy, is meant depersonalisation, as appears by these words: "To divide where one should merely distinguish, and then set side by side elements arbitrarily cut asunder, such is the method of the associationists; separating thought from the thinking subject, and considering thought as a term definite and complete in itself, they ignore its natural prolongation into a substantial ego where it has its root, and treat it as a unity, apt to be added to other unities to form a sum, which they call the ego; this enables them to boast of nowhere finding in their analysis any substantial reality; it enables them to define the ego as a collection of thoughts, emotions, volitions, desires; a succession of conscious states; a flux, or bundle, of sensations and impulses". Further, enforcing the limitations of the province of physics, **P. Duhm** maintains this thesis: "A physical theory is not an explanation; it is a system or mathematical propositions, deduced from a small number of principles, the aim of which is to represent as simply, completely, and exactly as possible, a collection of experimental laws". **P. Vignon**, 'Sur le Materialisme Scientifique,' alleges the fact of mimicry in animal development as an argument against the antiteleological mechanism of M. le Dante. In the June number, **P. Duhem's**, 'La théorie physique,' is a paper for every student of physics to consider. The aim of physical science is not to tell what things are, but how they behave: it is to register neatly and predict accurately the course of phenomena. A physical theory is an abstract and condensed representation of natural phenomena. Thus it is the business of Mechanics to describe as com-

pletely and simply as possible the movements that take place in nature. The physical student may, and continually does, do more than this; he produces a theory of the constitution of matter, or of the innermost nature of electricity; but in so doing he outruns physics and turns metaphysician. There is an interesting *compte rendu* of Dr. Dubois's *Les psychonévroses*, advocating the moral treatment of nervous diseases; also of Dr. Sollier's *Les Phénomènes d'Autoscopie*, i.e., of corporeal visions of one's own person, whether of outward contour or of inward configuration, as of brain or skeleton; also an account of De Wulf's *Introduction à la Philosophie Neoscholastique*, which proclaims St. Thomas Aquinas the only possible rival to Kant, admitting that he needs modernising, and showing how he should be modernised. In defending his thesis for his doctorate at the Catholic Institute of Toulouse, "of the logical connexions of metaphysics with dogma," **M. Labeyrie** protests against the reduction of all philosophy to psychology.

REVUE DE MÉTAPHYSIQUE ET DE MORALE. 12^e Année, No. 5. September, 1904. **L. Brunschvicg**. 'La révolution cartésienne et la notion spinosiste de la substance.' [M. Couchoud has declared that Spinoza is the direct and inevitable outcome of the pre-Cartesian philosophies. M. Brunschvicg replies by a statement of the relative position of Descartes and Spinoza, and of the influence of the former.] **G. Vailati**. 'Sur une classe remarquable de raisonnements par réduction à l'absurde.' [*Reductio ad absurdum* is a more important form of argument than is usually believed. Important use has been made of it in geometry, in the modern theory of numbers, and in formal logic.] **L. Couturat**. 'Les principes des mathématiques.—vi. La géométrie.' **G. Lechalas**. 'Une nouvelle tentative de réfutation de la géométrie générale.' [A criticism of M. Delsol's *Principes de Géométrie*.] **F. Marquet**. 'Sur l'idée de Patrie.' [An interesting continuation of the discussion on patriotism.] Livres nouveaux, etc.

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. Bd. xxxiv., Heft 5-6. **L. Hirschlaff**. 'Bibliographie der psychophysiologischen Literatur des Jahres, 1902.' [3050 titles: the bibliography of the preceding year had 3624.] Bd. xxxv., Heft 1. **H. Feilchenfeld**. 'Ueber die Sehschärfe im Flimmerlicht.' [Moving objects, given simultaneously in the field of vision, are less disturbing to perception than resting objects (veil). On the other hand, they produce the unpleasant feeling of flicker.] **F. Kiesow**. 'Ueber die einfachen Reaktionszeiten der taktilen Belastungsempfindung.' [Experiments with a special apparatus: discussion of the three types of the simple reaction and of their variability.] **Beyer**. 'Beitrag zur Frage der Parosmie.' [Report of two cases.] Literaturbericht. Bd. xxxv., Heft 2. **W. Sternberg**. 'Zur Physiologie des süßen Geschmacks.' [Enumeration and analysis of sweet-tasting substances is the best method of obtaining an answer to the fundamental question as to the gustatory principle in chemical compounds.] **F. Kiesow**. 'Nochmals zur Frage nach der Fortpflanzungsgeschwindigkeit der Erregung im sensiblen Nerven des Menschen.' **W. Schoen**. 'Paradoxes Doppelsehen.' [Explanation of cases, with critique of Schlodtmann.] Literaturbericht. Bd. xxxv., Heft 3-4. **A. Borsche**. 'Ueber die Ursachen der Herabsetzung der Sehleistung durch Blendung.' [The reduction of visual acuity is due to a purely physical alteration of the image, i.e., to dispersion and reflexion of light in the physical media of the eye. Critique of Heymans' doctrine of inhibition.] **O. Lipmann**. 'Die Wirkung der einzelnen Wiederholungen auf verschieden starke und verschieden alte Assozia-

tionem.' [The stronger an association, the more is it strengthened by a recurrence. And recurrence has the greatest effect upon that association which, at some previous time, was most strongly impressed.] **F. Kiesow.** 'Ueber die Tastempfindlichkeit der Körperoberfläche für punktuelle mechanische Reize: Nachtrag.' [Supplement to the paper in Wundt's *Festschrift*.] **F. Kiesow.** 'Zur Kenntnis der Nervenendigungen in den Papillen der Zungenspitze.' [Demonstration of Ruffini's papillary plexuses in *Macacus*.] **H. Beyer.** 'Nasales Schmecken.' [The sweet and bitter tastes of chloroform and ether are not sensed in the *regio olfactoria*.] **W. Nagel.** 'Einige Bemerkungen über nasales Schmecken.' Literaturbericht. Bd. xxxv., Heft 5. **J. Richter** und **H. Wamser.** 'Experimentelle Untersuchungen der beim Nachzeichnen von Strecken und Winkeln entstehenden Grössenfehler.' [Much individual variation. Hanging angles of 120° are underestimated; lines of 5 and 10 mm. overestimated.] **F. Weinmann.** 'Zur Struktur der Melodie.'—I. **E. Dürr.** 'Erster Kongress für experimentelle Psychologie in Deutschland.' Literaturbericht. Bd. xxxv., Heft 6. **F. Weinmann.** 'Zur Struktur der Melodie.'—II. [Attempts to explain the intervals of the tonal scale and the structure of melody in terms of the theory (psychologised by Lipps) that tonal relations depend upon vibration ratios.] **W. Schuppe.** 'Meine Erkenntnistheorie und das bestrittene Ich.' [Reply to Ziehen.] Namenregister. Bd. xxxvi., Heft 1-2. **Loeser.** 'Ueber den Einfluss der Dunkeladaptation auf die spezifische Farbenschwelle.' [A few seconds after dark-adaptation has begun, colour sensitivity is markedly increased. It reaches a maximum after eight to twelve minutes, and then gradually falls to a definitive level at forty to forty-five minutes. Correlation of these with Piper's results.] **E. Becher.** 'Experimentelle und kritische Beiträge zur Psychologie des Lesens bei kurzen Expositionszeiten.' [Critique of the Wundt-Zeitler theories of roving attention, and assimilative and apperceptive reading, in the light of experiments. As regards the influence of word-form and dominant letters, there is truth in both the Wundt-Zeitler and Erdmann-Dodge contentions.] **M. Levy.** 'Ueber die Helligkeitsverteilung im Spektrum für das helladaptierte Auge: zugleich ein Beitrag zur Lehre von den anomalen Trichromaten.'—I. [Coincidence of brightness maximum (in yellow-green for a "red-blind" and an anomalous trichromatic system.)] **F. Kiesow.** 'Zur Frage nach den Schmeckflächen des hinteren kindlichen Mundraumes.'—I. Die Uvula.' [No taste beakers are found in the uvula of children.] **H. Wolff.** 'Bemerkungen zu der Arbeit Ueber die Abhängigkeit der Pupillarreaktion von Ort und Ausdehnung der gereizten Netzhautfläche, von Dr. G. Abelsdorff und Dr. H. Feilchenfeld in Bd. xxxiv. dieser Zeitschrift.' **G. Abelsdorff** und **H. Feilchenfeld.** 'Erwiderung auf die vorstehenden Bemerkungen von Dr. H. Wolff.' Literaturbericht. Bd. xxxvi., Heft 3. **F. Schumann.** 'Beiträge zur Analyse der Gesichtswahrnehmungen.'—IV. [Illusions of direction.] **R. Simon.** 'Ueber Fixation im Dämmerungssehen.' [The deflection of the eye is due, as regards direction, to an uncertain factor (probably certain conditions in the muscular system), and as regards magnitude to the brightness of the object or the degree of adaptation.] **S. Exner.** 'Zur Kenntnis des zentralen Sehaktes.' [Discussion in the light of Hitzig's and Imamura's experiments on the dog.] Literaturbericht. Bd. xxxvi., Heft 4. **J. Fröbes.** 'Ein Beitrag über die sogenannten Vergleichenungen übermerklicher Empfindungsunterschiede.'—I. [Experiments with lifted weights, by the method laid down in Müller's *Methodik*. The paper contains valuable introspective material.] **G. A. Hofer.** 'Untersuchungen über die akustische Unterschiedempfindlichkeit und die Gültigkeit des Weber-Fechnerschen Gesetzes bei normalen Zuständen, Psychosen und funktionellen Neurosen.' [Experi-

ments by the method of r. and w. cases; Weber's Law holds approximately over a wide range of intensities. The pathological experiments are preliminary only, but give promising results.] **Bumke.** 'Untersuchungen über den galvanischen Lichtreflex.' [In fatigue, the limen of the light reaction is lowered, that of the pupillomotor reaction raised; the normal ratio may be 1 : 2, the abnormal as high as 1 : 40.] *Literaturbericht.*

ARCHIVES DE PSYCHOLOGIE. Tome iii., No. 2. **J. L. des Bancels.** 'De la Mémoire.' [General discussion of the function of memory in the organic and inorganic worlds.] **A. Lemaitre.** 'Un cas d'Audition Colorée hallucinatoire, suivi d'observations sur la stabilité et l'hérédité des photismes.' **W. M. Kozlowski.** 'Le Plein et le Vide.' [Among the constituents of the world of extension, admitted by current science, two are of rational (force and ether), two of intuitional origin (matter and motion). The psychological sources of this dualism must be taken account of, and the dualism transcended by a reconstructed psychogenesis of space.] *Recueil des Faits: Documents et Discussions.* **M. Thury.** 'À propos d'un Rêve Significatif.' **M. Daubresse.** 'Mémoire Musicale.' **M. Daubresse.** 'Suggestion.' **E. Claparède.** 'Association Médiate dans l'Évocation Volontaire.' [Typical case of mediate association from the writer's experience; reply to Piéron.] **T. Jonckheere.** 'La première Conférence Belge pour l'Amélioration du Sort de l'Enfance Anormale.' *Bibliographie. Notes diverses.* Tome iii., No. 3. **M. Borst.** 'Recherches expérimentales sur l'éducabilité et la fidélité du témoignage (Psychologie der Aussage).' [Experiments with four coloured pictures; narrative and examination of witnesses. In general, about one-tenth of a voluntary deposition is erroneous; about one-twelfth of answers under oath are also erroneous. The accuracy of report may be increased by practice; women are fuller and more accurate witnesses than men; narrative is more accurate than answers under examination.] *Recueil des Faits: Documents et Discussions.* **E. Claparède.** 'Congrès allemand de psychologie expérimentale.' *Bibliographie. Notes diverses.*

ZEITSCHRIFT FÜR PHILOSOPHIE UND PHILOSOPHISCHE KRITIK. Bd. cxxiv., Heft 1. **Ludwig Busse.** 'Immanuel Kant.' [In praise of Kant as a university teacher.] **P. Beck.** 'Erkenntnistheorie des primitiven Denkens (Schluss).' [Primitive man first realises time, both past and future, as the abode of supernatural beings, a habit of which more modern notions about eternity are a survival. In like manner general notions or concepts began by being regarded from a mystical point of view, which continued to prevail during periods of advanced speculation.] **Gregor v. Glasenapp.** 'Der Werth der Wahrheit (Schluss).' [Truth in itself has no value. The information given by Judas to Caiaphas was strictly true but ought not to have been given. On the other hand there are justifiable and even meritorious falsehoods. Truth is to be prized only in so far as it tends to unite us with the All-One, either directly, or by uniting us with one another.] **Hans Schmidkunz.** 'Neues von den Werten.' [Gives some account of a work by Kreibitz in which the theory of values is placed on a psychological basis. Kreibitz takes for his starting point a threefold division of interests: (1) Interest in myself, which is hygienic; (2) interest in other persons, which is ethical; and (3) interest in objects as such, which is æsthetic.] **Georg Ulrich.** 'Bewusstsein und Ichheit.' [Expounds a theory of knowledge which seems to be based on Berkeley and J. S. Mill, although without reference to those names.] **Erich Adickes.** 'Bericht über philosophische Werke, etc.' [An account of English and American works in philosophy published in the years

1897-1900. Among others, a considerable space is given to the new edition of Roger Bacon by J. H. Bridges, B. Rand's *Shaftesbury*, B. Russell's *Leibniz*, Shadworth Hodgson's *Metaphysic of Experience*, Ladd's *Philosophy of Knowledge* and his *Theory of Reality* and Münsterberg's *Psychology and Life*.] **G. Kohfeldt**. 'Ein bisher noch ungedruckter Brief Kants.' Recensionen, etc. Bd. cxxiv., Heft 2. **Wilhelm Waetzoldt**. 'Zum Problem einer normativen Ästhetik.' [Recommends (with justice) the sculptor Hildebrand's "Problem der Norm" as a contribution to the inductive treatment of aesthetics.] **Eduard v. Hartmann**. 'Energetik, Mechanik und Leben.' [Chiefly interesting as a reply to William Stern. Hartmann is well aware that the gradual approach of energy to entropia admits of being represented by an asymptotic curve. But the approach will be quite sufficiently near to make life as we know it impossible. There is nothing peculiarly pessimistic in looking forward to this eventuality as certain. If life is on the whole a bad thing its cessation will be an un-mixed gain. If it is better than nothing, that it should have ever existed, even for a limited period, is so much to the good. Anyhow entropia will only bring about by a very dilatory process what, according to Hartmann's philosophy, will be effected in a systematic and purposeful way by a readjustment of the present arrangement of things.] **M. Wentscher**. 'Zur Kritik des psychophysischen Parallelismus.' [A defence of Busse against Paulsen's vindication of the "double-aspect" theory. The chief point made is that the idea of an extended world could not be "given" to consciousness unless body acted on mind.] **Gustav Gerber**. 'Über das religiöse Gefühl.' [The religious feeling consists in a consciousness of the supreme personality of the universe acting through our personality for the accomplishment of his ends.] **Carl Töwe**. 'Die Schopenhauer-Portraits.' Recensionen, etc. Bd. cxv., Heft 1. **R. Falckenberg**. 'Zu Kuno Fischers 80. Geburtstage.' [A page of graceful compliment to the veteran historian of philosophy.] **Franz Strunz**. 'Die Psychologie des Joh. Bapt. van Helmont in ihren Grundlagen.' [A not very successful attempt to exhibit van Helmont as an original thinker.] **Anna Tumar-kin**. 'Die Idealität der ästhetischen Gefühle.' [Æsthetic emotions are as real as any others, and indeed from the nature of the case are often more intense. Being excited by imaginary situations they are not disturbed by any selfish regard for our own interests; while for the same reason the current of feeling is not weakened by being converted into a motive force for action. Very active natures are, as such, unfitted for æsthetic appreciation; and æsthetic natures, of which Hamlet is the chief type, are averse from action. An excellent article, far the best in the number.] **E. Dutoit**. 'Bericht über die Erscheinungen der französischen philosophischen Litteratur, 1900-1901.' [Gives particular attention to the works of Couturat on the Logic of Leibniz, of Charles Renouvier on the Dilemmas of Metaphysic, and of Letourneau on Ethnic Psychology.] **Hans Schmidkunz**. 'Ethik des Mitleids.' [Not so much a discussion of sympathy as a controversial criticism of Wilhelm Stern's book on the subject, where the reviewer desiderates a clearer distinction between the sciences of value (logic, ethics and æsthetics) and the sciences of fact.] **Bruno Bauch**. 'Sittlichkeit und Kultur.' [Accepting Kant's ethical theory as fundamentally true we must look for the realisation of the good to civilised society. Civilisation is not itself the ideal, but is a *sine qua non* for its attainment.] Recensionen, etc.

ARCHIV F. D. GESAMMTE PSYCHOLOGIE. Bd. i., Heft 2 und 3. **T. Lipps**. 'Einfühlung, innere Nachahmung, und Organempfindungen.' ["Die spezifische Eigenart des ästhetischen Genusses . . . besteht darin, dass dieser Genuss ist eines Gegenstandes, der doch, eben sofern er Gegenstand des

Genusses ist, nicht Gegenstand ist, sondern ich; oder, dass er Genuss ist des Ich, das doch, sofern es *ästhetisch* genossen wird, nicht 'ich' ist, sondern gegenständlich. Dies alles . . . macht den Sinn des Begriffes der 'Einfühlung' aus . . . Indem ich . . . in der gesehenen Gestalt mich tätig fühle, fühle ich mich zugleich in ihr frei, leicht, stolz. Dies ist ästhetische Nachahmung. Und diese ist zugleich ästhetische Einfühlung. . . . Dies ist eben das Besondere der ästhetischen Nachahmung, dass dabei die fremde Bewegung an die Stelle der eigenen tritt." After these general definitions the writer takes up the question of organic sensations and their relation to æsthetic enjoyment, with completely negative result. "Organempfindungen, welcher Art sie auch sein mögen, gehen in die ästhetische Betrachtung und den ästhetischen Genuss in *keiner* Weise ein." **F. Krueger.** 'Differenztöne und Konsonanz.' [First part of an elaborate and carefully written article. The explanations of consonance by overtones; Lipps's rhythm theory, and the question of the 'unconscious' in the realm of tone; Stumpf's theory of fusion. The formulation of the question of consonance: perception and feeling; direct consciousness and judgment; the judgment of interval and consonance; tonal sequence and the compound clang. The fundamental significance of difference-tones for consonance and dissonance: historical and critical review of the literature; the difference-tones themselves and their consequences.] **A. Mayer.** 'Ueber Einzel- und Gesamtleistung des Schulkindes.' [A very thorough paper (140 pp. in length) on the relative advantages of separate work and work in class (for which latter the not very happy term *Gesamtleistung* is chosen) for school children. The subjects were fourteen boys from the fifth year's course of the Würzburg *Volksschule*; for control experiments, another fourteen were selected from the same class a year later. The subjects are characterised in detail; the range of topics covered is wide, and the results are submitted to careful evaluation, qualitative and quantitative. The general result is that work in company is better for the progress of the pupil than work by himself. The paper ends with practical suggestions.] Referate. **W. Wirth.** 'Fortschritte auf dem Gebiete der Psychophysik der Licht- und Farbenempfindung.'

Bd. i., Heft 4. **C. Pentschew.** 'Untersuchungen zur Oekonomie und Technik des Lernens.' [Discusses the results of thirty experimental series, with meaningless and meaningful material, and child and adult observers. Piecemeal learning has the disadvantages of disturbance of context, the formation of inhibitory associations, poor memorisation of transitions, forgetfulness of sections already learned with consequent unpleasant feelings, mechanisation of learning without realisation of the sense, unequal concentration of attention with consequent liability to distraction, unequal distribution of the repetitions, and finally uncertain reproduction and weak retention. The only disadvantage of learning by wholes is that the extent of the material makes a greater drain upon the attention, and thus leads more easily to mental fatigue. The author sought to control the fatigue-effects by specially devised experiments, and promises a future paper on this subject.] **E. Dürr.** 'Ueber die Frage des Abhängigkeitsverhältnisses der Logik von der Psychologie; Betrachtungen in Anschluss an die "Logischen Untersuchungen" von Edmund Husserl.' [Criticism of Husserl, Schuppe and Eelsenhans. There are three relational possibilities. Logic may be the applied, psychology the pure science; logic may be the part, psychology the whole; logic may be an independent theoretical science, based however upon certain fundamental presuppositions, concepts and laws, which themselves appear as problems in psychology. The writer rejects the two first and accepts the third definition.] Referate. **A. Vierkandt.** 'Fortschritte auf dem Gebiete der Völkerpsychologie, Kultur- und Gesell-

schaftslehre: Literaturbericht über das Jahr 1902.' **H. Gutzmann.** 'Die neueren Erfahrungen über die Sprachstörungen des Kindesalters: Referat über die Jahre 1898-1902.' *Besprechungen.*—In reviewing the total contents of this first volume, we must emphasise the value of the collective *Referate*. It must also be acknowledged that the standard of the original articles is fully up to that of the *Studien*. These papers are, however, woefully long. If everything must be printed, it would be advisable to break up the monotony of the pages by better differentiated subheadings and by the use of various forms of type. A blacker ink would also make the reading of the *Archiv* much more pleasant than it now is.

Bd. ii., Heft 1. **F. Krueger.** 'Differenztoene und Konsonanz.'—II. [Discusses the elementary distinguishing characteristics of consonance and dissonance; the affective impression and the general effect of compound clangs; and the relation of consonance to fusion.] **A. Vierkandt.** 'Wechselwirkungen beim Ursprung von Zauberbraeuchen.' [Psychological analysis of the motives involved in certain magical ceremonies: emotive factors, suggestion, dominating habits of thought, etc.] *Besprechungen.*

PHILOSOPHISCHES JAHRBUCH. Bd. xvii., Heft 1. **Dyroff.** 'Das Selbstgefühl.' [This is the first article of a series. Is what we call consciousness a feeling which is the foundation of all our knowledge? If there be no such feeling, we may also ask whether consciousness is the foundation of all knowledge. The statement 'Consciousness exists,' may mean that it is a special form of cognition, or that there is to be found in feeling an evident proof that the individual who feels exists.] **Straub.** 'Die Aseität Gottes.' [In conclusion the author shows that the fact of God's existence is that of His possibility. If God did not exist, He would not be possible. In this case, a *posse ad esse valet illatio*, because His idea is that of a necessary Being—of One that cannot *not be*. Such a notion is absurd—or if not absurd, God really exists, since what must exist exists in reality, unless 'what must exist' includes self-contradiction.] **Von Holtum.** 'Das Angenehme und das Gute.' [If pleasure is good, what is pleasurable is only good relatively, in so far as it causes pleasure: but what is absolutely good must cause pleasure. Some pleasurable things may then be evil in a sense, and cause pleasure only on account of an abnormal disposition of body or mind, proceeding from suggestion, subservience to the opinions of others, undue subjectivism, or morbid state, or custom.] **Endres.** 'Otlohs von St. Emmeram Verhältnis zu den freien Künsten.' [This is the first of two articles describing the work of an early mediæval thinker on behalf of the study of the liberal arts.] **Lauer.** 'Die Gewissenslehre Alberts des Grosses.' [A statement in two papers of Albert the Great's theory of Cognition, which in its main lines follows that of the majority of Schoolmen.]

RIVISTA FILOSOFICA. Anno vi., vol. vii., Fasc. iii., May-June, 1904. **C. Cantoni.** 'L'Apriorità dello spazio nella Dottrina Critica di Kant.' [Kant is right in teaching that we know the properties of space *a priori*, if such knowledge is understood in a logical, not in a psychological sense. That is, what we first learn by gradual experience afterwards acquires a certainty which reason alone can give. He is less happy in treating space as a purely formal and subjective element of perception. One fails to see how two factors differing so radically in their origin and nature as Kant's "form" and "matter" could ever unite in a living whole.] **E. Sacchi.** 'L'Immoralismo di Nietzsche giudicato da A. Fouillée.' [Nietzsche is of no account as a philosopher, and his ideas are not original; but

he will live for ever as a writer and a poet.] **A. Piazzi.** 'Ancora sulla Libertà degli Studi nella Scuola Media.' [A polemic of merely personal interest.] **E. Juvalta.** 'La dottrina delle due Etiche di H. Spencer.—Parte III. ed ultima.' [Spencer is right in taking the conception of an ideally perfect society as the ethical standard. But his system is vitiated by three great errors: (1) defining the absolute end of conduct as pleasure; (2) identifying the constitution of the ideal society with the limit of evolution which has no limit; (3) perpetuating the injustices of an economical régime where inequalities of social position, independent of personal merit, are only maintained by force.] *Rassegna Bibliografica*, etc. Anno vi., vol. vii., Fasc. iv., September-October, 1904. **G. Zuccante.** 'Sul concetto del bene in Socrate a proposito del suo asserito utilitarismo.' [Xenophon's reports of the Socratic conversations are quite trustworthy, but none of them need be interpreted in the sense of utilitarianism; nor is the Protagoras of Plato really utilitarian. All such dialogues must be read in connexion with more unequivocal expressions of opinion and interpreted by them.] **A. Gropalli.** 'La funzione pratica della filosofia del diritto.' [Chiefly occupied with explaining the contradictory views held by different Italian schools of jurisprudence as to whether it should be a theoretical science only, or aim at the guidance of future legislation.] **G. Tarozzi.** 'Per lo studio della famiglia.' [The history of the family presents a progressive transference to moral control of what had before been a subject of legal control, and a continuous creation of new responsibilities and duties. The good of the family is an end in itself, and should by no means be subordinated to the good of the state.] **E. Sacchi.** 'Le religioni positive e la religione dello spirito secondo Sabatier.' [Sabatier's religion of the spirit is a beautiful but utopian conception. It would neither have done the work of the early Church nor does it meet the exigencies of modern civilisation.] *Rassegna Bibliografica*, etc.

XI.—NOTES.

MIND ASSOCIATION.

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LEWIS CARROLL'S LOGICAL PARADOX (MIND, N.S., 3).

May I recur for a moment to this now ancient puzzle in order to suggest a solution not yet, I think, put forward—a solution which follows naturally from a certain view of the nature of propositions of the form *If A, then C*. The view in question is a modification of that propounded by J. S. Mill,¹ according to whom *If A then C* means *The proposition C is a legitimate inference from the proposition A*. In this I agree with Mill, accepting, however, the distinction drawn by Mr. Johnson and Dr. Keynes between Conditionals and Hypotheticals (Keynes, *Formal Logic*, part ii., ch. viii.), and supplementing Mill by the recognition that while in some propositions beginning with *If* the whole proposition is merely formal, since the Antecedent expresses the whole logical ground of the Consequent—*e.g.*,

If M is P and S is M, then S is P;

If all M is P, then no M is not P—

in other propositions of the same form the Antecedent expresses only part of the logical ground of the Consequent, the remaining part being understood—*e.g.*,

If M is P, S is P.

This is elliptical or 'enthymematic,' the unexpressed clause being S is M.

This is the simplest and most obvious case of those propositions of the *If A, then C* kind which are not formal or self-contained. *If A is B, C is D*, is a commoner form, but the principle is the same. I am aware that examples could be brought forward which may seem incompatible with this view, cases in which Antecedent and Consequent have no relation of inference to each other, *e.g.*, *If to-day is Tuesday, the sea is salt*—but all these are I believe at the best either merely rhetorical or epigrammatic, comparable to such categorical forms as *A man's a man, Cards are cards, The truth is true, Some children are not children, Some justice is not just*—which are of course only admissible if reducible to *S is P*, and *S is not P*—and the view includes quite naturally and simply the important class of propositions of the forms

If A $\left\{ \begin{array}{l} \text{were} \\ \text{had been,} \\ \text{etc.} \end{array} \right\}$ B, then C $\left\{ \begin{array}{l} \text{would be} \\ \text{would have been,} \\ \text{etc.} \end{array} \right\}$ D.

which, to say the least of it, present great difficulties on the view that in *If A then C*, C is not to be regarded as an inference from (or consequent of) A.

I proceed to apply my view to Lewis Carroll's 'paradox'. The dilemma (to give his "ornamental presentment") is as follows:—

At a certain barber's there are three men who "mind the shop," of whom, of course, one (except on holidays) must always be in. These three are named respectively, Carr, Allen, and Brown. At the time when we are concerned with the shop, Allen has been ill and is still very shaky, so he never goes out without Brown. It is therefore true that if Allen is out, Brown is out. Since, however, if Carr is out and Allen is out, Brown must be in, we have

(1) If Carr is out, then if Allen is out, Brown is in;

(2) If Allen is out, Brown is out;

and 'Uncle Joe' hence undertakes to prove to 'Uncle Jim' that Carr must in any case be in.

¹ Mill's *Logic*, bk. i., ch. iv.

According to Mr. W. E. Johnson "the two disputants may agree in expressing the problem in the following form:—

Principal Antecedent :
Principal Consequents :

Carr is out.
If Allen is out, Brown is in ;
If Allen is out, Brown is out.

Uncle Joe uses the general method of the *reductio ad absurdum*, for he disproves the principal antecedent by maintaining that *the consequents to which it leads*¹ are incompatible. But in reality the two sub-hypotheticals which form his principal consequents are *not* incompatible. For in saying that two propositions are incompatible we mean that their combination involves a logical impossibility. Now the combination of these sub-hypotheticals does *not* involve any impossibility, but involves merely the denial that Allen *can be out*. In other words, we combine two hypotheticals, having the same antecedent with contradictory consequents, to prove the falsity of the common antecedent. Here we interpret the principle of the *reductio ad absurdum* in precisely the same way as Uncle Joe, but we apply it to the sub-hypotheticals instead of to the *principal hypotheticals*. Since, then, the two sub-hypotheticals taken separately would prove 'Allen is in,' the two principal hypotheticals of which these are the consequents prove 'If Carr is out Allen is in' (MIND, N.S., 3, p. 583). (What would Mr. Johnson give as the *Principal hypotheticals* here?)

I demur, however,

(a) to calling Carr is out the "Principal Antecedent," and think that the whole root of the matter is that Carr is out is *not* the Antecedent of (2).

(b) I object also to the conclusion that

If A, then C
If A, then not C

prove in all cases "the falsity of the common antecedent" A. They do this indeed if A gives the whole ground for the contradictory conclusions C and not C, but only if this is the case. Take for instance the following:—

(1) If that is your dog, your dog is a Welsh collie ;

(2) If that is your dog, your dog is not a Welsh collie.

In (1) the suppressed premiss is *That is a Welsh collie*, while in (2) it is *That is not a Welsh collie*, and clearly (1) and (2) as thus understood cannot be true together. The contradictoriness of the expressed consequents of (1) and (2) could only disprove their common antecedent, if those consequents followed from that expressed antecedent, in which case that expressed antecedent must in itself be contradictory.

Similarly, we may have symbolically:—

If S is M, S is P [because M is P];

If S is M, S is not P [because M is not P].

The two Hypotheticals cannot be true together—but how does the supposition of their truth tend to disprove *S is M*?

The principal supposition (or premiss) in the whole case of Allen, Brown, and Carr (understood and argued from though not expressed by Lewis Carroll) might be stated thus:—

(1) If either two of the three (A, B, C) are out, the other must be in. From this taken alone it follows, that If Carr is out, if Allen is out, Brown is in.

But further knowledge of the relations of in and out between Allen and Brown gives the second premiss or supposition on which we proceed.

(2) If Allen is out, Brown is out, and (2) must be satisfied as well as (1).

¹ Italics mine.

By (1) *one* of the three men must be in,
 Therefore if A is out and B is out, C is in,
 Therefore if C is out, then A is in or B is in.
 But by (2) If A is out, B is out :
 Therefore if A is out, C is in,
 Therefore if C is out, A is in.

E. E. C. JONES.

NOTE BY MR. A. F. BRADLEY.

In the last number of *MIND* Mr. A. Sidgwick complains that he has suffered injustice. His attitude towards the new Gospel, it seems, has been misrepresented, and he seeks to deny my statement that he claims to be the champion of philosophical scepticism. As to the first point, how far he has been misrepresented the reader may decide; but on the second point perhaps I should offer a few words. In the article to which I referred (*MIND*, N.S., No. 11) the reader, I think, will find that Mr. Sidgwick unquestionably takes the field as the self-elected representative of philosophical scepticism, and the doubt is merely as to the meaning to be given to this term. Certainly Mr. Sidgwick explicitly there rejects scepticism in one sense and explicitly defends it in another special sense which I have noticed elsewhere. But these special senses, and in short the ambiguous detail of the article, are, I submit, here irrelevant. The words 'philosophical scepticism' were used by me in their ordinary meaning. And the real question is whether the scepticism which Mr. Sidgwick champions does or does not imply scepticism in this general sense. Does he or does he not advocate the main sceptical conclusion that no positive doctrine in philosophy is theoretically indisputable? As to his acceptance of this conclusion the reader, I submit, is left no liberty to doubt (see more particularly p. 339). And I thought it well perhaps to remark on the apparent co-existence of this position with a benevolent interest in our new philosophical creed.

If Mr. Sidgwick's intention was not to accept the main doctrine of scepticism, as commonly understood, he has of course only to state this, if indeed he is in a position to do so. And as his attack on myself showed to my mind little comprehension of my meaning, there is no reason, I presume, why I may not on my side have failed to understand his. But as to the person who in that case is most to blame for the wrong of which Mr. Sidgwick complains, the reader must judge, if he thinks it worth while to do this. I should be sorry to have contributed to injustice, but on the other hand I could not accept responsibility for any divergence between Mr. Sidgwick's literary intentions and their execution. I should add that practically I am acquainted only with those writings of Mr. Sidgwick to which I have referred. And I must end with an apology to the readers of *MIND* for intruding on them with matters which perhaps have little but a personal interest.